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AVIATION SAFETY FROM COVER TO COVER
NOVEMBER/DECEMBER 2004

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FRONT COVER: Beechcraft Baron *at the Truckee Tahoe Airport, California, see page 5. (H. Dean Chamberlain photo)*

BACK COVER: This reproduction of a 1910 Hanriot *flies at the Old Rhinebeck, NY, Aerodrome.(Mike Brown photo)*

The Clouds Have Rocks In Them!

by Michael Lenz

H. Dean Chamberlain photo

This is the first in a series of articles designed to provide general aviation (GA) pilots with a safe and practical approach to weather. It is driven by an analysis of weather-related accidents compiled by the General Aviation Joint Steering Committee (comprised of government, industry, and aviation user organizations) whose purpose is to promote the reduction of GA accidents. This article addresses Controlled Flight Into Terrain (CFIT) from encounters with Instrument Meteorological Conditions (IMC) and introduces a concept developed by the Aircraft Owners and Pilots Association/Air Safety Foundation (AOPA/ASF) called Terrain Avoidance Plan or TAP.

The TAP information, which follows this article and is reprinted with permission, is from the AOPA/ASF web site <www.aopa.org/asf/asfarticles/2004/sp0407quiz.html>. It also contains a TAP instructional quiz.

Weather is the largest single cause of aviation fatalities. Most of these accidents occur to a general aviation operator, usually flying a light single or twin engine aircraft or helicopter, who encounters IMC conditions while operating under visual flight rules (VFR). There are other categories under which these weather-related accidents can be grouped, such as maneuvering flight or aeronautical decision-making, but weather seems to be a cause, finding, or factor most frequently cited in these accidents.

This is an exchange from a recent accident involving a Cessna 177 in which three people were killed. The aircraft impacted terrain east of Ashville, North Carolina, at the 2,860-foot level.

> The pilot told the ground controller his approximate on-course heading would be due east, "but I want to be sure that I don't get into the clouds going over the mountains." The controller stated, "if you need to deviate around weather or something, just let me or departure know." The pilot acknowledged, and the controller stated, "[ATIS] Alpha is showing that the cloud layer is two-thousand-five-hundred overcast now. It's been lowering a little bit all day."
>
> Once airborne, the pilot contacted the radar east controller, and the flight was cleared to turn left on course. The pilot stated, "if the clouds come down a bit, I may want to do some scud-running ... I may want to go up along the expressway to Asheville and over by Interstate 40." The controller cleared the flight to maneuver as necessary, and the pilot replied, "I'm gonna try and climb out and see what it's like up here." About 1241, the controller advised the pilot, "you're eight miles northeast of the Asheville airport, radar contact is lost. You can squawk VFR, frequency change approved." The pilot stated, "thank you very much. We're following Interstate 40...."

In another case, according to a recovered bill of sale, the pilot purchased the aircraft (a twin-engine Cessna 320) two days prior to the accident. The flight was en route home when the accident occurred.

> The pilot was issued the current altimeter setting shortly before 10:00 p.m. local time, and he requested current weather for Perry,

Georgia. The nearest weather reporting facility, Macon, Georgia, reported 600-foot ceiling and seven miles visibility. About 15 minutes later, the pilot was asked if he was instrument qualified and the pilot stated that he was instrument qualified. When the controller asked the pilot for his current flight conditions, the pilot reported that he was at 1,300 feet and requested a direct heading to Perry. The flight descended into terrain, apparently while trying to visually locate the airport.

These two examples typify accidents in which it appears that the pilot had lost situational awareness of the elevation of nearby terrain, leading to a so-called "Controlled Flight Into Terrain Accident."

It may be surprising to learn that over half of the pilots involved in weather accidents did not receive an official weather briefing. This can be debated with doubters saying that most pilots will obtain weather information, but perhaps not from an official source of record, such as Automated Flight Service Station (AFSS), DUATS, or a commercial weather provider. Once the flight is underway, the number of pilots who receive a weather update from AFSS is dismal. An analysis done by FAA's National Aviation Data Analysis Center (NASDAC) found that during a recent five-year period, only 19 pilots out of 586 fatal weather accident flights received any information from Flight Watch or a Flight Service Station, once enroute. (For more information on NASDAC see <www.nasdac.faa.gov>.)

There have been volumes written on VFR into IMC accidents. These include National Transportation Safety Board (NTSB) studies dating back 40 years or more. It's time to do something different!

First, let's realize two things. Light general aviation aircraft travel slowly, 100 to 150 knots, and they must fly in the weather rather than above it like our jet counterparts. If you do the math and consider the time it takes to get airborne after a preflight weather briefing, couple it with large distances between surface reporting stations, throw in some uncertainty in the forecast and the very limited number of pilots who update weather information in-flight, an encounter with weather conditions different from those expected is quite likely.

Now, what can we do to manage these risks? Analysis of the many recent weather accidents has shown that most of the VFR encounters with IMC involved low clouds and restrictions to visibility—not weather of a severe nature, like ice or thunderstorms. For these weather encounters, being able to maintain control of the aircraft and knowing the height of terrain and obstacles (TAP) would prevent a large number of accidents.

In Bruce Landsberg's article "Beware the Dark Side" (*AOPA Pilot*, July 2004), the concept is summed up in a couple paragraphs from the article:

"Flying below minimum altitudes to stay under the clouds and maintain visual contact is dumb—no other way to describe it. In flat terrain the IFR minimums provide 1,000 feet of terrain or obstacle clearance, and in mountains, the margin is increased to 2,000 feet. The way to safety is up—not down. That's as counterintuitive as pushing forward in a stall to start flying again, but it works. Down low is stuff to hit—guaranteed. Climb and the only things up there are air and the very occasional IFR flight. The odds are overwhelmingly in your favor that a collision will not occur.

"Having said that, the British Royal Navy once had some especially odious punishments to hand out to miscreants (keel hauling, yardarm suspensions, and cat-o'-nine-tails, to mention a few), and anybody who deliberately violates the sanctity of controlled airspace without an IFR clearance in IMC is deserving of the worst. However, an inadvertent encounter is allowed, provided that it: a) scares the bejabbers out of the pilot and b) he or she vows not to get into that situation again. The death penalty is too strong a punishment for that type of transgression and that is what de-

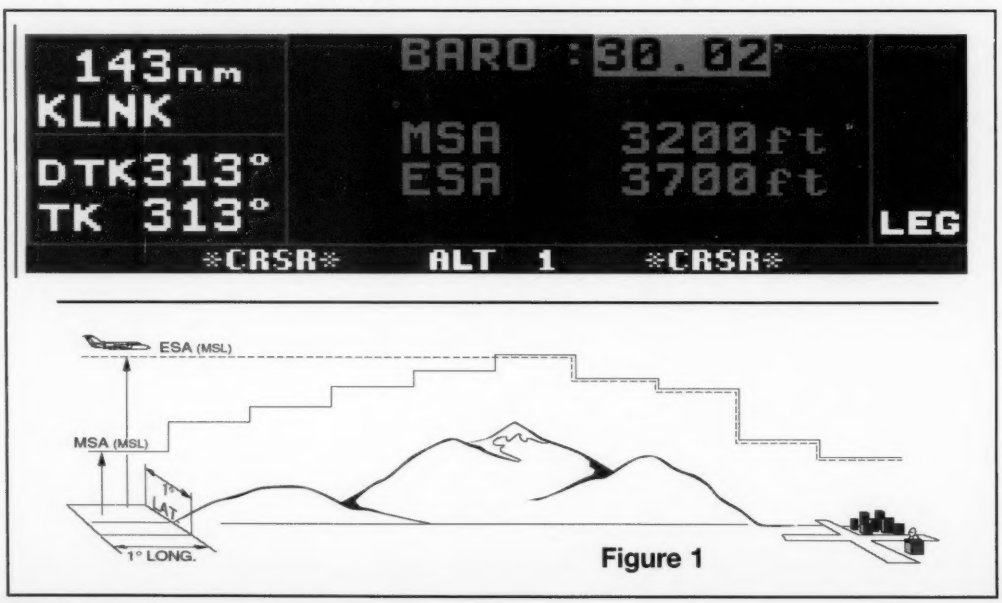


Figure 1

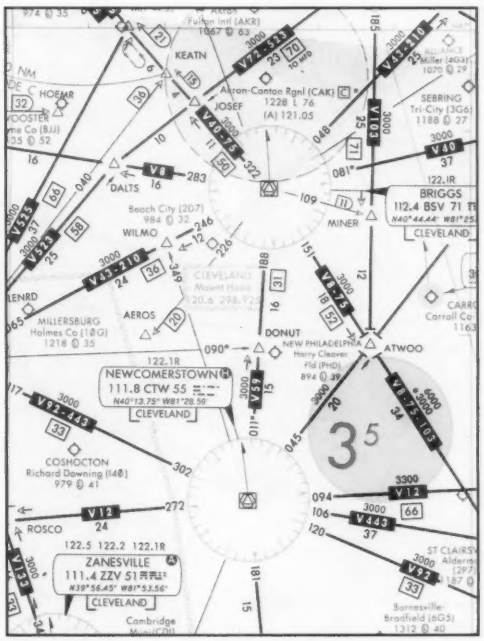
scending frequently entails. The objective here is to learn and fly again—not to experience the sudden stop!"

Pilots have other tools available as well. Almost all aviation GPS receivers have a function to show safe altitudes. (See Figure 1). Like all GPS features, the pilot must take the time to become proficient with these features in advance. Along these same lines, is an experimental tool found on the Aviation Weather Center's ADDS web site <http://adds.aviationweather.noaa.gov/flight_path/>. This enables terrain to be seen in relation to various weather phenomenons such as ice, turbulence, and winds. The feature of ceiling and visibility is scheduled to be added next year. Always remember that Area Forecasts (FA) show cloud height as "MSL" not "AGL," as in Terminal Forecasts (TAF). This is very important if terrain along the proposed route is at or near these forecast ceiling heights.

Michael Lenz is a Program Analyst with the FAA's Office of System Safety.

Terrain Avoidance Plan (TAP)

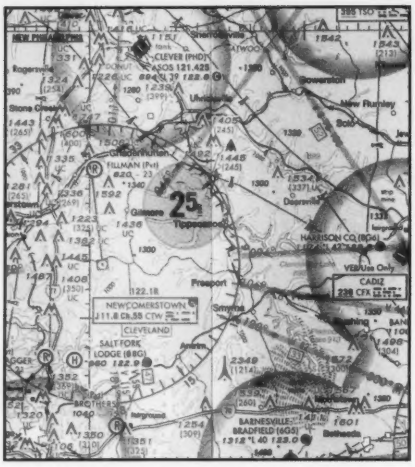
This section provides night VFR pilots or pilots in areas of less-than-good visibility with a procedure to avoid Controlled Flight Into Terrain (CFIT). Plan the enroute portion of your flight to be at or above the altitudes shown below to avoid terrain or towers. Remember: Ceilings must be at least 500 feet above your cruising altitude when in Class E airspace.



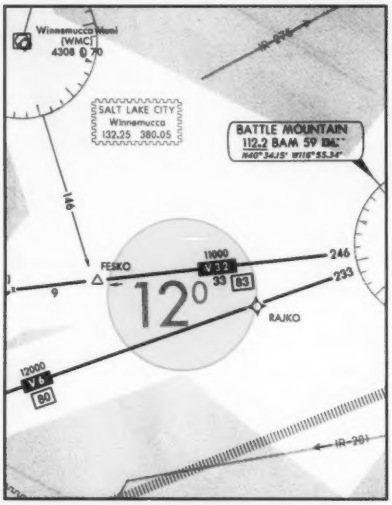
1. Within the quadrangles of latitude and longitude shown on this IFR enroute low altitude chart the Off Route Obstruction Clearance Altitude (OROCA) is 3,500 feet. This altitude guarantees 1,000-foot obstacle clearance in non-mountainous terrain and can be used at night or when visibility is reduced to ensure obstacle clearance.

   The Minimum Enroute Altitude (MEA) highlighted on this chart is 6,000 feet. This altitude meets obstacle clearance requirements and provides acceptable ground based navigation signal coverage.

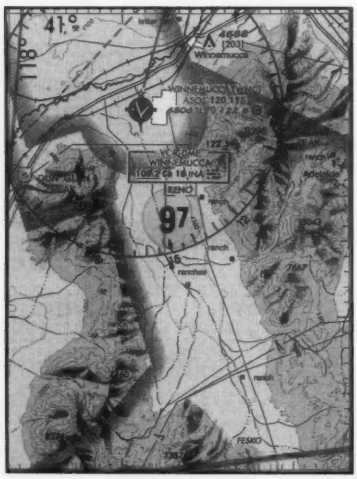
   The minimum obstruction clearance altitude (MOCA) highlighted is 3,000 feet. On NACO charts this altitude is shown with an *. MOCA is the lowest altitude between two fixes that meets obstacle clearance requirements. This altitude only assures an acceptable ground based navigation signal within 22 nautical miles of a VOR. Satellite based navigation systems, like GPS, will still receive navigation signals at these altitudes. OROCAs, MEAs, and MOCAs are found on IFR enroute low altitude charts.



2. The maximum elevation figure (MEF) in this area is 2,500 feet. This altitude represents the highest elevation, including terrain and other vertical obstacles bounded by lines of latitude and longitude. MEFs are only found on VFR sectional charts. MEFs may provide as little as 101 feet of obstacle clearance and are much less conservative then using the OROCA, MEA, or MOCA.



3. The OROCA highlighted here is 12,000 feet. This altitude offers 2,000 feet of obstacle clearance in mountainous terrain and can be used at night to ensure obstacle clearance. The only other altitude offered on this IFR enroute low altitude chart segment is an MEA.



4. The MEF in this area is 9,700 feet. MEFs are determined by rounding the highest elevation within the quadrangles to the next 100-foot level. These altitudes are then adjusted upward between 100 to 300 feet. Recognize this could give a pilot as little as 101 feet of obstacle clearance. Note the highest peak on this VFR sectional segment is 9,396 feet.

Try the Obstacle Clearance ASF Safety Quiz to test your new skills.
View ASF's Safety Brief on Terrain Avoidance.

SEPTEMBER SNOW

story and photos by H.Dean Chamberlain

In September, I was assigned to report on the FAA's important role at the Reno air races. This was an exciting year for the Unlimited category. For those not familiar with the category, the Unlimited aircraft are your World War II type aircraft with their powerful piston engines. The final Unlimited Gold race on Sunday afternoon, September 19, was decided by a time penalty imposed on the lead aircraft for cutting a pylon. Based upon the reconstructed time, the second place finisher, only a few seconds behind the leader, was declared the winner. Needless to say, it was a great race week in the high Nevada desert. Everyone involved deserves congratulations for a safe week of flying.

There was concern that Sunday afternoon about being able to hold the Unlimited Gold for the fastest aircraft in the category because of low clouds moving into the area. In fact, the Unlimited Gold race's schedule was advanced to try and get the race flown before the weather lowered the ceiling. Like many things in life, once the race was over the weather improved enough to complete the other events.

But, that is another story. This story is about a September surprise.

The next morning as I was packing my camera gear into the car at my hotel's parking lot in Sparks, Nevada, I saw my first snow of the season blanketing some of the mountaintops west of Reno. Although I had planned on photographing gliders at the Truckee Tahoe Airport (KTRK) in Truckee, California, that morning, I spent most of my time at that airport photographing snow-covered airplanes and people removing snow from their aircraft. At 5,900 feet mean sea level (MSL) the airport was high enough to be covered in snow. Broken clouds covered most of the sky and some of the high ground surrounding the basin where the airport is located.

Although the weather forecasters supporting the Reno air races had been tracking a cold front approaching the area for several days, I don't think anyone at Truckee expected to see snow. I believe the snow surprised more than one transit pilot at KTRK. In talking to some of the pilots, I learned that they had landed at the airport so that they could then drive to Reno for the races. By landing at Truckee, the pilots expected to avoid any departure delays they might have faced landing at Reno-Stead, the site of the races, or Reno-Tahoe International. The reason was non-race/show aircraft tied down at Stead were secured on one of the taxi areas at about the midfield point which is located inside the racecourse. Once the races are over and the field reopened, it takes a while for the transit aircraft to be retrieved. Pilots landing and keeping their aircraft at Truckee had expected a nice drive back to KTRK and a quick departure out of the area. Such was not to be that weekend or that Monday morning.

By the time I arrived at the airport after driving past several minor traffic accidents on I-80, the main road between Reno and Truckee, the airport was still closed for runway clearing

(Page 5) Scott McClain shovels snow around the aircraft as pilot Dean Eggum preflights it. Sherry Briegleb (below) removes snow by hand to avoid scratching the family's award winning VANS R-4. Paul Phillips cleans and dries his Beechcraft Debonair *(Pages 6 above and 7).*

and pilots were shoveling and scrapping snow off their aircraft to get ready to takeoff as soon as the airport opened.

The pilots' snow removal tools ranged from snow shovels and brooms to bare hands. Although most were scrapping off snow, some, I think, were hoping for the sun to melt the snow. Once the sun came out, the ramp area soon became a series of mini torrents of melted water running down every tire path though the snow to the low spots on the ramp area.

As I was walking, or should I say while trying to keep my running shoes dry, around the ramp and tie-down area at Truckee, I spotted one pilot with a beautiful Beechcraft using a brush and squeegee to remove the snow, and then a towel to dry the plane. What impressed me about his technique was that he was drying the aircraft with a towel. Other pilots were just removing the snow by sweeping it off the primary surfaces with no

though of drying their aircraft.

When I stopped to chat with him, I learned—to paraphrase one famous radio personality's daily commentary—the rest of the story.

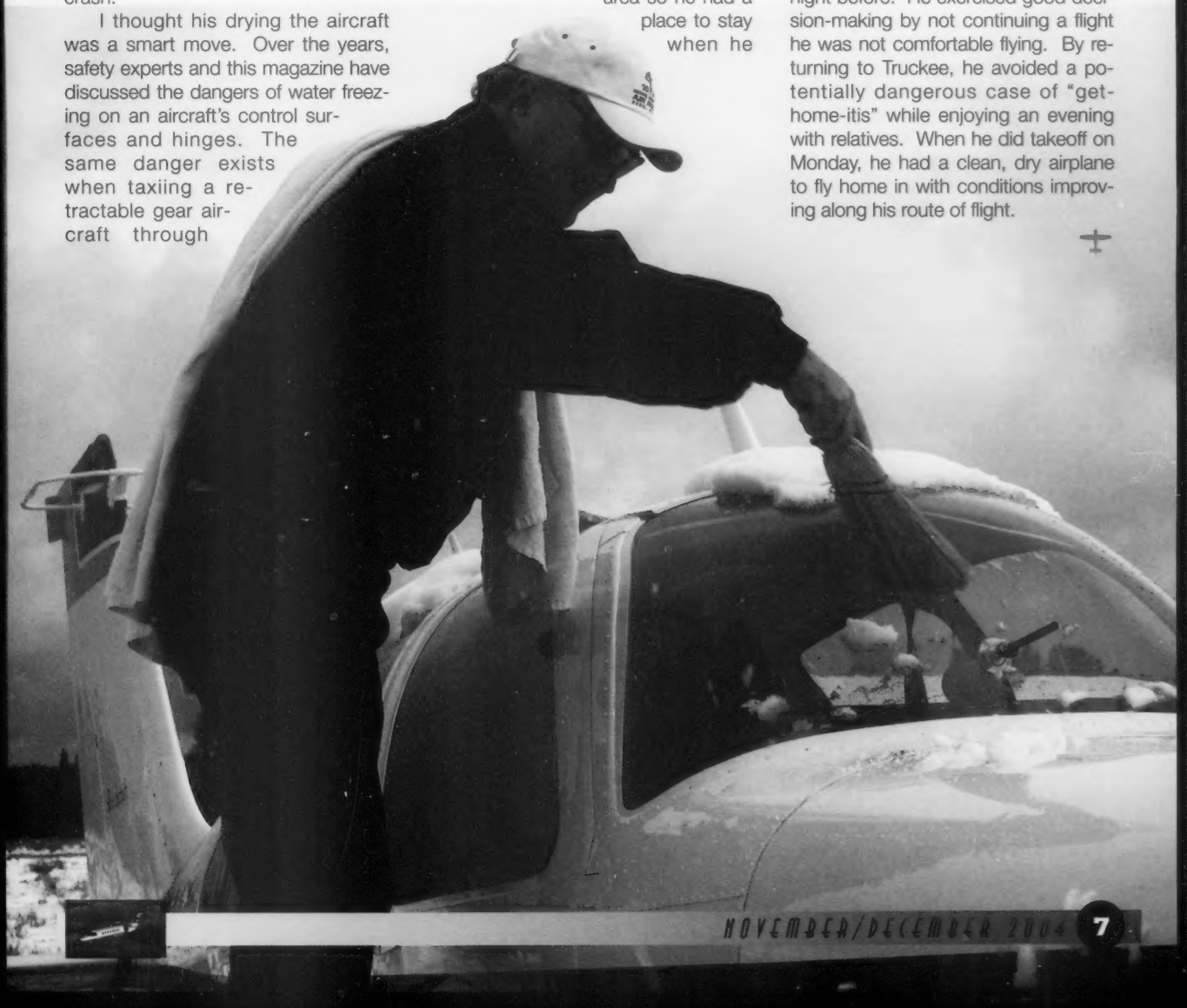
The pilot was Paul Phillips from Carmel by the Sea, California. When I commented about his drying his aircraft off, he said one of his instructors had made it a point warning him of the potential risk of flying in freezing conditions. He said the instructor had commented about how melting snow or water can collect in an aircraft's control hinge area and later freeze as the aircraft climbed up through the freezing level. If the newly formed ice blocked or locked a critical control function, the aircraft could possibly crash.

I thought his drying the aircraft was a smart move. Over the years, safety experts and this magazine have discussed the dangers of water freezing on an aircraft's control surfaces and hinges. The same danger exists when taxiing a retractable gear aircraft through water or slush on the ramp or runway. If the water or slush does not blow off the gear before the gear is retracted, it is possible the gear may not lower if the aircraft encounters freezing conditions after takeoff and the gear freezes in the wheel well.

But what impressed me more than his drying his aircraft off with a towel was his decision to spend Sunday night on the ground rather than continuing his flight out of Truckee. He said he had taken off Sunday evening to go back home, but he didn't like the idea of having to climb out of the Truckee/Lake Tahoe area with the weather building up over the mountains. Fortunately for him, he had relatives living in the Lake Tahoe area so he had a place to stay when he returned to Truckee for the night.

The next morning he took his time getting to the airport. By the time he arrived and started cleaning off his aircraft, the sun had broken through the clouds and started melting the snow. When he finally took off, he had the best conditions possible. The sun was shining. The runway had been cleared. The snow was melting. His airplane was ready and safe to fly. And, equally important, the clouds were breaking up on a beautiful California day permitting departing aircraft to climb above the surrounding mountains in VFR conditions.

I think the lesson here is that he had not attempted to fly home in potentially dangerous conditions the night before. He exercised good decision-making by not continuing a flight he was not comfortable flying. By returning to Truckee, he avoided a potentially dangerous case of "get-home-itis" while enjoying an evening with relatives. When he did takeoff on Monday, he had a clean, dry airplane to fly home in with conditions improving along his route of flight.



TIPS ON WINTER FLYING

by Bryan Neville

Winter flying poses unique challenges for the general aviation pilot. Here are a few ideas to consider for a safe flight.

PREFLIGHT PLANNING

Careful consideration must be given to several areas before "Old Man Winter" actually arrives. Installation of winter baffles, removal of wheel pants, grade of oil, condition of hoses, clamps, fittings and seals, condition of batteries, and tension of control cables are all items to review before the cold temperatures of winter cause difficulties. The route of flight itself may prove to be the most important consideration. Do you plan to fly through a valley or over mountains? Can you follow a well-traveled road or will you chance flying across wilderness territory? The difference may only be minutes, but may prove life saving if you have to make an off-airport landing.

PREFLIGHT INSPECTION

If you have or can use a heated hangar, your preflight will not be much different than in the summer months. If your airplane is out in the cold, you may have a tendency to rush your preflight. DON'T! If you park a warm airplane outside with less than full tanks, condensation of water may occur. Be sure to carefully sump each tank.

Preheat is a good idea not only for the engine, but also for the cockpit. If you use a heater be watchful for the danger of fire; have a fire extinguisher handy. Don't tune your radios before they have had a chance to warn up. Cold temperatures have been known to cause instruments, buttons, and knobs to stick or break.

Be sure to remove all snow, frost, and ice. If you cannot blow it off yourself, don't count on the takeoff roll to do it for you. If the aircraft surface is warm and you let it sit in falling snow, the snow may melt and refreeze and then this ice is covered with new-fallen snow. Always check.

During engine starting, there is a tendency to over-prime which results in washed-down cylinder walls. This can also result in fires under the engine cowling. This is not a pleasant way to start a skiing vacation. Read and follow the manufacturer's suggestions for cold weather starting. It's always a good idea to ask pilots who live and fly in the cold climate for ideas. After the engine starts, the use of carburetor heat may assist in proper fuel vaporization until the engine develops sufficient heat.

TAXI AND TAKEOFF

The need for braking and/or sharp turns while taxiing should be minimized. Taxi speeds should be slow enough to allow for every contingency. Skiing into a ditch is not only embarrassing but can also bend metal. Cold weather can cause "below sea level" density altitudes. You should be aware of engine power, particularly with turbo or supercharged engines. Don't overboost. During climb-out, be aware of cylinder head temperatures. Because of winter baffling, you may need to climb at a faster airspeed.

EN ROUTE

Winter weather is very changeable. Always obtain a weather briefing and always file a flight plan. You should keep your radios on and listen on a commonly used frequency for your area. Flight Watch on 122.0 is always a good one. Flight following with center is also a good idea.

Carburetor ice generally forms in temperatures between 32 and 80 degrees F, if humidity is 50% or more. If visible moisture is present, ice will form at temperatures between 15 and 32 degrees F. Winter flying also involves the use of cabin heaters; be watchful for the signs of carbon monoxide poisoning. And last, but not least, do not continue VFR flight into adverse weather conditions. The aviation statistics are full of pilots who thought they could. Don't become a statistic.

DESCENT

During descent be watchful for signs of carburetor ice. It is better to carry a little power during the descent. You may need to use flaps and/or gear to keep speeds reasonable. Be careful you don't descend into low visibility conditions, such as fog or low clouds.

LANDING

Landing at a busy airport is generally safer because the landing conditions can be passed from pilot-to-pilot. Again, be aware that braking may be minimal or non-existent.

POSTFLIGHT

Some items to consider are: top off the tanks to forestall water condensation and install engine and pitot covers, wing covers (if you have them), and control locks.

SURVIVAL

Always file a flight plan and keep it updated. Don't file a round robin flight plan; it covers too much territory. Experts say that survival is 80% mental, 10% equipment, and 10% skills. Plan ahead. File a flight plan. Expect to be found. Stay dry, don't eat snow, and stay warm. Carry a blanket, a sleeping bag, a first aid kit, matches and a copy of your filed flight plan. Do all this and you'll have an excellent chance of greeting your rescuers with a smile.

Bryan Neville is an Aviation Safety Inspector at the Salt Lake City FSDO. This article is reprinted from Plane Talk, *the FAA Northwest Mountain Region's Safety Program newsletter..*

Preflight Planning - It's A Life Saver

by Sander Vandeth

Have you ever heard the saying "Failure to plan is planning to fail"? While not a common adage in aviation circles it is, nevertheless, just as relevant. Numerous accidents in general aviation have resulted from inadequate preflight planning, as illustrated by the following extracts from a number of general aviation accident investigation reports:

"The errors in the flight plan may have provided the pilot with a false impression that he had sufficient fuel for the flight."

"The pilot's preparation for the flight was inadequate, in that his knowledge of the aircraft's systems was insufficient to meet the requirements of a basic abnormal situation."

"The aircraft was significantly heavier than the pilot had calculated and the strip length was insufficient for the intended operation."

"The planned route was over mountainous terrain in adverse weather conditions and at an altitude above the freezing level."

The AOPA Air Safety Foundation, in their *General Aviation Accident Analysis Book 1982-1988*, reported that "a large number of weather-related accidents implicated a lack of weather briefing prior to flight, or receipt of incomplete briefing due to pilot impatience or, pilot failure to understand the briefing prior to initiating or continuing the flight into known adverse weather conditions." This was again highlighted in a later AOPA Air Safety Foundation study *(General Aviation Weather Accidents - An Analysis and Prevention Strategies*) in which it was observed that for half the pilots involved in weather accidents, no record existed of preflight or weather briefing. Furthermore, the FAA in their publication *General Aviation Preflight Planning to Reduce Accidents* observed, "accident analysis has revealed that preflight planning is often inadequate or entirely ignored."

Why is this? While there are no doubt a number of reasons, one reason could be a lack of appreciation of what preflight planning can do to help prevent accidents. Every pilot is aware of the basics of preflight planning such as obtaining a weather forecast, preparing a flight plan, checking the weight and balance, and checking the takeoff and landing performance of the aircraft. But preflight planning is much more than this, if we are to use it to its full potential as a means of reducing flying risk. In essence, preflight planning is about examining and assessing the potential hazards and risks, looking at all the options available, and planning the flight so that all risks are minimized to acceptable levels. It is in fact a risk reduction process that provides a platform for error avoidance and mitigation. Most accidents are the result of a series of errors known as an error chain, and breaking that chain is the basis of accident prevention.

For example, consider the following hypothetical error chain:

- Being in a hurry.
- Not fully assessing the weather forecast and proceeding with a VFR flight in marginal VFR weather.
- Being forced to reduce altitude because of a lowering cloud base while hoping conditions will improve.
- Taking too long to make the decision to return or divert.
- Entering instrument meteorological conditions (IMC) without adequate instrument flying skills and becoming disoriented with a consequential loss of control.

Had the pilot recognized the hazardous warning sign (i.e. the lowering cloud base), and immediately carried out a 180-degree turn, the error chain could have been broken in time. Better still; had the pilot not been in a hurry and carefully assessed the weather picture before departing, he or she would probably have concluded that the weather was marginal and the risks too great under the circumstances. The error chain would therefore have been broken at the very outset—that is, during preflight planning.

There are numerous possible hazards associated with flying, ranging from gusting crosswinds, thunderstorms, loss of situational awareness, icing, a short landing strip, illusion, getting behind the airplane, stress, fatigue, lack of knowledge, lack of proficiency, and potential aircraft equipment failures, to name but a few. These hazards can be categorized in terms of the four main areas of aviation risk, namely the pilot, the airplane, the environment, and external pressures. In order to determine the level of risk, it is necessary to thoroughly understand and evaluate the situation and conditions pertaining to each of these categories of risk, as part of the preflight planning process.

The environment, in terms of the weather, is probably the most obvious consideration and requires more than a quick glance to ascertain if the forecast is acceptable for the planned flight. Weather forecasts are rarely 100% correct. They are based on probabilities and not all the information available to the forecaster is provided. The weather, therefore, can be different from that forecast. You, the pilot, must assess the probable weather and make decisions regarding the

route, the altitude, amount of fuel to carry, possible escape options, or whether to cancel the flight altogether. This requires a basic understanding of meteorology and the ability to make judgments about the impact any potential weather may have on the flight. Weather planning takes time and being in a hurry and taking short cuts can be the start of an error chain.

An equally important consideration is to review your level of knowledge, proficiency, and health. Any limitations in these elements can pose risks, depending on the circumstances. It should be noted that cognitive skills degrade quite rapidly with time, and knowledge refreshment is often required if the risks are to be eliminated or reduced. In addition, an honest assessment of your proficiency may either lead you to fly under different conditions or go for a check flight with an instructor to practice critical skills. Allowing sufficient time for preflight planning is especially important if you are an infrequent flyer.

Whether or not particular hazards, or potential hazards, pose an unacceptable risk depends on the nature of the flight, the type of airplane, the capability of the pilot, and what options are available for either avoiding or reducing the risks. For example, a local flight in a single-engine aircraft on a windless stable sunny day is far different from a flight in a complex twin-engine aircraft in bad IMC attempting to land at an airfield in rugged terrain. A well-known risk reduction strategy is to take a slightly longer route over flat country, rather than fly over mountainous terrain, thus avoiding potentially hazardous conditions such as icing, turbulence, and lack of a suitable emergency landing area. Another strategy is to take steps during preflight planning to reduce the cockpit workload thus minimizing the risk of "cockpit" errors such as loss of situational awareness, getting behind the airplane, and communication breakdown. There are in fact, many strategies and tactics for minimizing risk that can be readily applied during preflight planning. Familiarity with these is, naturally, a prerequisite. Furthermore, there will be occasions in a pilot's flying career when hazards are encountered in flight, and familiarity with the recognized ways of managing the particular situation, is also required. Of course, some conditions or situations are hazardous no matter what. If the risks cannot be avoided or reduced to acceptable levels, or the risks are simply too great, then the flight should either be cancelled or postponed.

Evaluating and assessing risk requires the application of judgment, which in turn is influenced by our level of knowledge and experience, as well as any inherent attitudes we may have. Some attitudes can cloud a pilot's judgment and can lead to unsafe decisions with potentially dangerous consequences. Impulsive pilots have been known to succumb to "get thereitis," which in turn has resulted in numerous accidents. Unfortunately, many attitudes considered acceptable, and even encouraged in everyday life, are in fact inappropriate in a flying environment. Hence conscious attention must be paid to countering such behavior if it is present in a pilot's makeup.

Use of the *FAA Personal Minimums Checklist* (see page 21) is a useful tool to aid in this risk assessment process. This provides a structured methodology for addressing the risks associated with each of the categories of aviation risk. Minimums can be set that are commensurate with your level of knowledge, proficiency, and experience. A Personal Minimums Checklist can be downloaded from the FAA web site <www.faa.gov/avr/afs/fits/pub_practices.cfm>.

Armed with a good understanding of the conditions likely to be encountered, the route and altitude selection can proceed along with fuel quantity determination, weight and balance checks, runway length checks, emergency equipment needs, clothing requirements, personal equipment organization, and so on. This phase of the process should also include consideration and planning of escape options, should "unexpected" circumstances arise (e.g. deteriorating weather conditions, a rough running engine, electrical failure, vacuum failure, icing).

Thorough preflight planning provides a pilot with the opportunity to be mentally prepared for the flight. That is, you will be mentally prepared to cancel the flight at the last minute if conditions warrant (irrespective of passenger pressures), you will be mentally prepared for any emergency (e.g. engine failure on takeoff), you will be mentally prepared to divert or turn back should the weather deteriorate, and you will be mentally prepared for all normal flight activities. Such mental preparation is a vitally important component of the risk reduction process.

Now let us look at the specifics of preflight planning. This is best illustrated by considering the four main areas of aviation risk and using a checklist to formulate a series of questions that should be asked during the preflight planning process.

The Pilot

With 70% to 80% of all general aviation accidents being attributed to some kind of pilot failure, the pilot is clearly the most important part of any flight. It is vital therefore that he or she have an ability to meet the needs, or potential needs, of the flight. Potential needs include situations such as an engine failure, an electrical failure, a diversion, a vacuum failure, or any other abnormal occurrence. Note that an abnormal occurrence can be as simple as being diverted from your planned track by ATC. Pilots must be prepared for such eventualities; otherwise an error-inducing situation can easily result

The first step is to check and confirm that you satisfy all the relevant regulations. Some questions you would ask yourself are:

- Is my medical current?
- Am I impaired in any way?
- Have I met the recent experience requirements?

The next step is to make an honest assessment of your proficiency. Proficiency needs will depend on the type of flying you do. If you are plan-

ning an IFR flight at night with the destination weather requiring an instrument approach, then your proficiency needs will be far greater than if you are planning a few circuits at the local airport. When assessing your proficiency, it should be remembered that most people tend to overestimate their ability, particularly with regard to infrequently practiced maneuvers. Note that flying is like an orchestra—all the components must work together and practice is needed. Flying once every three months does not necessarily mean you are proficient.

- Am I proficient in the aircraft type?
- Have I recently practiced emergency procedures?
- Do I have the required level of proficiency for all phases of the flight and for the conditions likely to be encountered?

Another pilot-related factor is the extent of your knowledge. There are many aspects of flying about which a pilot needs recallable knowledge and understanding. For instance, how many pilots can recall the communications breakdown procedure? Preflight planning gives you the time to review the knowledge needed for the flight and refresh your memory where necessary. A good way to do this is to review the flight activities in your mind from beginning to end or write the sequence of activities (including radio calls, checks, level changes, etc.) on a piece of paper. Practice on a personal computer-based aviation training device is also very helpful, particularly if you simulate as much as you can.

- Am I familiar with all aspects of the aircraft to be flown (equipment operation, fuel systems, performance parameters and operating procedures)?
- Can I readily recall the emergency procedures (engine failure, electrical failure, instrument failure, fire)?
- Am I aware of the various risk factors and avoidance strategies and tactics?
- Am I familiar with the required communications procedures for the flight?
- Do I know the relevant regulatory rules and procedures?
- As with assessing proficiency, most people overestimate their recall capability. Be honest with yourself and brush up on your knowledge where required.

Fitness is another important consideration. The fact that you have a current medical certificate does not mean you are necessarily fit to fly. Illness, medication, stress, fatigue, and your eating habits can seriously affect your ability to fly. Many pilots use the acronym "I'M SAFE" to check their fitness to fly.

Illness	Do I have any symptoms?
Medication	Have I been taking prescriptions or over the counter medications?
Stress	Am I under pressure or unduly worried?
Alcohol	Have I been drinking within eight hours? Within 24 hours?
Fatigue	Am I tired and not adequately rested?
Eating	Am I adequately nourished?

Even though you may be fit to fly, consideration should also be given to ensuring you don't suffer any ill effects during the flight. Preflight planning provides the opportunity to plan the flight such that you will limit the flying hours to avoid becoming fatigued, will carry sufficient water to avoid becoming dehydrated, and will carry supplemental oxygen if planning to fly above 10,000 feet. Hypoxia is insidious and you can be overcome without knowing it.

The Aircraft

The aircraft is the second element of risk that we need to consider. The amount of fuel to be carried, familiarity with the avionics, experience in type, aircraft performance capability, and aircraft equipment needs are primary considerations.

Fuel starvation and fuel exhaustion continue to be significant causes of aircraft accidents, often due to pilot error. Some of these errors have been as simple as turning the fuel lever in the wrong direction. Some questions to ask yourself are:

- Have I allowed sufficient fuel, in addition to the normal requirements, in case of possible diversions, flight maneuvering, variation in fuel consumption, the need for an alternate, holding, changes in forecast wind, etc.?
- Do I have to limit fuel because of weight and balance or takeoff and landing limitations? Have I allowed sufficient fuel margin, consistent with my personal minimums?

An overweight or out of balance aircraft is a dangerous proposition and, if you are anywhere near the limits, a careful check is warranted. Remember you may not always be able to take full fuel, all passengers, or all baggage. Consider the following:

- Have I completed a weight and balance check for both departure and arrival and is it within the required limits for safe operation?
- If the weight and balance is near the limits, have I taken into account the actual weights rather than estimated weights?
- Have I checked to see if there are any weight limitations associated with the available runway lengths or required climb gradients?
- Can I carry full fuel, passengers and baggage?

Being proficient on one type of aircraft does not necessarily mean you are proficient on a different type. If you have not flown the aircraft recently, suitable dual instruction and/or practice may be required. You also want to make certain you are fully familiar with the aircraft, and refreshing your knowledge on aspects of the pilot operating handbook may be necessary. Note that there are often differences even between the same types of aircraft, as the avionics are generally different—especially with today's advanced technology. Familiarity with these differences is re-

quired, if errors are to be avoided.

The aircraft needs to be serviceable in every respect, which includes any necessary safety equipment.

- Has the aircraft been prepared for the likely conditions?
- Does the aircraft have all the required instruments and equipment in accordance with the regulations and the needs of the flight?
- Do I have relevant equipment in case of an emergency (life jackets, clothing, portable phone, handheld transceiver, water, food, relevant survival gear, etc.)?

In addition you want to make sure that you have the right personal equipment on board and that relevant items, which may be required in flight, are stowed so that they are accessible.

- Do I have all the required maps, airport details, and approach plates, and are they current? Do I have a checklist that is specific to the aircraft?
- Does my flashlight have fresh batteries (for a night flight)?
- Do I have all the navigation and communication frequencies?
- Do I have pen, pencil, and paper as well as stick-on paper in case of an instrument malfunction?

The Environment

A fundamental consideration during preflight planning is to determine and assess the conditions to which you will be exposed both before and during the flight. First and foremost is the weather, which as noted earlier, requires careful evaluation depending on the nature of the flight.

- Have I obtained an appreciation of the overall weather picture?
- Have I obtained, assessed, and interpreted the forecasts for departure, en-route, destination, alternate, and escape routes?
- Have I obtained a weather briefing?
- Do the forecasts cover the required time periods of the flight?
- Have I checked the icing levels?
- Have I checked the probability of carburetor icing?
- Are the conditions suitable for the flight?
- Is the weather such that I can return in case of difficulties following takeoff?
- Is the forecast crosswind below my personal minimums?

The conditions you and the aircraft will encounter (other than weather) at the point of departure, along the route, and at the destination, also need careful assessment depending on the nature of the flight.

- Have I checked the current NOTAMs?
- Have I studied the airport details (including taxiways and signs)?
- Have I checked the required runway length and compared it to the runway length available, taking into account the surface type and condition, slope, aircraft weight, temperature, altitude, wind, and other factors that affect the takeoff and landing distance? Have I checked the aircraft climb performance and ability to clear any obstacles?
- Have I studied the departure airport approach plates, and are they with me, in case of an IMC return (IFR flight)?
- Have I planned for possible alternative courses of action in case of such things as deteriorating weather, equipment failure, diversions, different departure procedures being required by ATC, or becoming inadvertently lost (e.g. remote area flying)?
- Have I planned a route and altitudes based on safe practices? For example:
  - Clear of icing.
  - At or above lowest safe altitude.
  - Avoidance of hazardous terrain.
  - Availability of clearly recognizable landmarks (large rivers, lakes, high ground, railways, highways).
- Have I identified the need for an alternate due to weather, runway lighting, or navigation aids?
- Have I left sufficient daylight for the flight (day flight)?
- Have I adequate knowledge of the route to be flown, relevant ATC procedures, and restricted/prohibited areas?
- Have I identified and checked the suitability of any emergency airstrips along the route (runway length, surface, slope, etc.)?
- Is there a likelihood of illusions and am I familiar with the ways of handling these?

The External Pressures

Self-induced pressures or pressure from passengers or friends can result in judgments being clouded with potentially disastrous consequences. Some simple questions will help avoid or at least bring such situations to your attention.

- Have I forewarned the passengers that there is always the possibility of the flight being cancelled or delayed and even after the flight has commenced, a diversion or return may be necessary?
- Have I allowed sufficient time to avoid being rushed or be put under time pressure? Have I notified people we are meeting that the expected time of arrival may change?

What If?

While addressing the four categories of risk, it is a good idea to ask yourself a series of "What If' questions.

What if:

- The headwinds are higher than forecast?
- The clouds are lower than forecast?
- Airframe icing is encountered?
- The electrical system fails?
- The engine fails?
- Severe turbulence is encountered?
- The anticipated clearance is unavailable?

- The planned route or altitude is changed by ATC?

Questions such as these help with mental preparation as well as assessing your preparedness for the flight.

Conclusion

Preflight planning is not just about preparing a flight plan. It is about risk minimization and ensuring that safety is always the number one priority of the flight. In other words, preflight planning provides the basis for decision-making both before and during the flight. By thinking through all the issues and options, you are much better prepared for any eventuality either planned or unplanned. It allows you to take all the actions necessary to minimize any potential risks in an unhurried and calm environment. Even a few circuits at the local airport require some preflight planning. You can for example have an engine failure on takeoff, experience communications failure, encounter a shift in the wind direction necessitating a crosswind landing, and so on. The point is, that every situation is different depending on the pilot, the aircraft, the environment, and external pressures. Allowing plenty of time for preflight planning and taking advantage of that time can be a lifesaver.

Sander Vandeth is a pilot who based this article on extracts from his publication, A Pilot's Guide to Safe Flying*, which is published by mCOVE Resources.*

Tales of an ASI

by Al Peyus

Okay, so our IFR skills are seeping away! Now what?

It is foggy, wet, and cold with low instrument metrological conditions (IMC) with freezing rain and blowing snow. It is just really nasty outside. And that is the good news! The bad news is you have an instrument certificate and own an airplane, but your airplane does not have boots! For those who may not know, some airplanes do have boots. Not the kind you wear, but leading edge deicing devices to protect critical sections of your airplane's airfoils during icing conditions. The bottom line is your aircraft is not approved for flight into icing conditions. You are grounded because of the bad weather. You just know it is going to be a very long winter.

So how do you even keep up with the changes in the National Airspace System, regulations, and the *Aeronautical Information Manual* (AIM)? How do you keep your instrument scanning skills and procedures sharp? It could be another long, long winter if you can't fly from November until March!

These are the kinds of thoughts that cross the minds of everyone who have an aircraft that is not FAA approved to handle light to moderate ice. We cannot get out to fly! So what do we do?

Remember last winter? After working so hard all summer to polish our skills and get them up to near perfect levels, you sat through the winter loosing those well-polished abilities! Instrument proficiency is proof positive that if we do not use it, we lose it!

Do you want to save time and money next spring rather then playing catch-up all over again? If so, now is the time for you to start planning and taking advantage of many of the options available to you to keep your skills alive and well!

What are some of the options available for us, you ask? Let's start at the high end and work our way down the expense ladder. Please note: For any of the training discussed below to be used to meet FAA currency or training requirements, that time must be logged in accordance with 14 Code of Federal Regulations (14 CFR) section 61.51. The simulator or flight training device use must be FAA approved, and an appropriately rated instructor must give the training.

There are several companies out there that have great, full-motion sim-

ulators available for instruction and currency. What a great way to maintain currency! If you have not been to a training session in a simulator in a few years, it is time to re-introduce yourself. Today's modern simulators have fantastic graphics, new avionics systems, exciting 270-degree visuals, and aircraft-perfect functions, failures, and indications.

There is little a modern FAA-approved simulator cannot imitate. It challenges even the most experienced pilot. Not only will your basic skills of scan and procedures be tested and reinforced, but also the "little" things that can go wrong can be shown and tested. Ever have a loss of oil pressure happen in flight? What about a loss of a vacuum pump? If not, it takes a minute or so before the attitude indicator actually "tumbles" or definitely shows a problem. When do you discover the attitude instrument is no longer providing accurate information? What is affected by a failed vacuum pump? What do the instruments (yes, plural!) look like when the pump fails? What do you use for back up? How do you make crosschecks now? These are all critical questions.

The flight simulator is a great tool to help build a solid skill base as well as maintaining your skill base. The appropriately rated instructors will take your normal type of flight and build training scenarios that match your "typical day in the air gone terribly wrong." It will be a slow building process showing you a variety of problems and failures. The building will continue until it seems you can take nothing more. But, you will learn to take more.

The training process is to teach you how to take problems and place them in proper priority of severity and need. (Fire before engine failure, before communication failure, etc.) The training also does an excellent job of helping you perfect your scan. You will also become good at handling both normal and emergency procedures. You will also learn a little about yourself! One other very important point that is often missed is the idea that the priority problem-solving list is a fluid list. It changes as more problems arise. It is never cast in stone!

Many simulators are available from as little as $150 an hour with instructor to as much as $1,200 an hour for the new and more complex aircraft.

If a simulator is too pricy, there are flight-training devices (FTD's) available. Although they do not have motion like a simulator, they can still provide great training! The top-of-the-line FTD's can do everything a simulator can do, except provide the physical sensation of movement. The visual acuity covers the lack of "actual" movement by interpreting the input to the eyes from all the great visuals and fools the brain into believing that you are truly moving!

Many of these are available at your local Fixed Base Operator (FBO). After a checkout by the CFI, you can use the FTD when you want to brush up on your skills with or without a CFI. Just remember, for the training to meet the FAA's regulatory requirements, an appropriately rated instructor must provide the training using an FAA-approved FDT. They are fantastic tools for use by you to help keep you from loosing those hard-earned skills. Almost everything that can be done in a simulator can be duplicated in a FTD.

Just like a simulator, an FTD can be programmed to provide multiple abnormal and/or emergency problems on a timed delay to occur in sequence or on a random schedule. Then all you have to do is sit down, start it up, and take off! The problems will start testing your skills, reinforcing your abilities, and teaching you about yourself.

With an instructor, the lesson is further enhanced with additional guidance and assistance in helping you build a priority list of action. What is even more informative is the discovery that your priority list will change as each problem appears. What happened first may not rate the most important or urgent status. Your instructor will demonstrate how to build your priority list and how to change it as systems fail or problems occur. This is a fantastic learning tool! One of the best parts of the FTD is the cost. The prices vary, but are well within the average pilot's budget from as little as $10 per hour to $80. In most cases, an hour in an FTD will cost less than an hour in your average IFR aircraft rental!

Last on the table, no pun intended, are the home-operated flight simulator programs. These are the ones that you can purchase from your local computer or electronic store. The products on the market today offer a wide range of aircraft to fly. In almost every case, there is a flight simulator computer program that has your aircraft displayed.

These computer-based programs provide the same visual scan training as the FTD and the full motion simulator. Many also have the ability to give abnormal and emergency problems with systems and controls. They require the user to be alert, keep scanning the gauges, build and keep a viable knowledge of the operable systems, and build a priority list of required actions!

The home computer-based program allows you, the user, to brush up on your scanning skills and procedures at your leisure! It is sitting there for your use whenever you want to test yourself! What a great tool right at your fingertips! And the cost? The basic program can be acquired for as little as $15 with some of the new and fancy ones for around $100.

In some cases, you may need to add some hardware to your computer. A control yoke or "stick" is always a great, and it is an inexpensive add-on. To add rudder-peddles and a power quadrant on may run a little more then most of us want to spend (around $150 to $300), but they are available for making it as real as a home PC can!

Remember, I said we either use it or we lose it! What are you going to be doing this winter to stay current?

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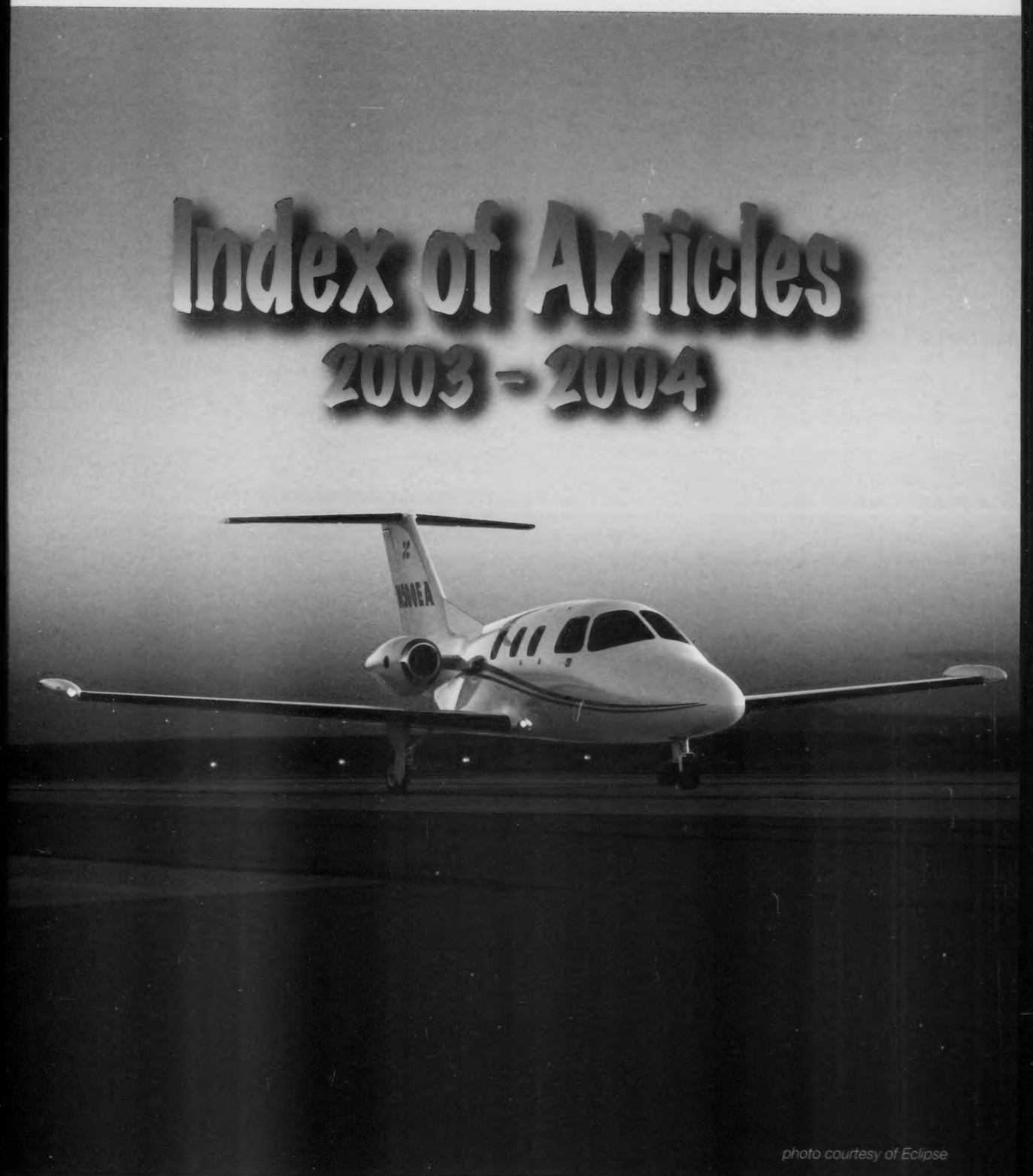

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We have a limited number of back issues in stock. If you see an article from a past issue that you would like to receive, contact us at (202) 493-4958 or e-mail WebmasterAvNews@faa.gov.

EXTERNAL PRESSURES

Trip Planning

Allowance for delays ..... _____ minutes

Alternate Plans for Diversion or Cancellation

Notification of person(s) you are meeting

Passengers briefed on diversion or cancellation plans and alternatives

Modification or cancellation of car rental, restaurant, or hotel reservations

Arrangement of alternative transportation (airline, car, etc.)

Personal Equipment

Credit card and telephone numbers available for alternate plans

Appropriate clothing or personal needs (eye wear, medication...) in the event of unexpected stay

► _____

_____

_____

_____

_____

Importance of Trip

The more important the trip, the more tendency there is to compromise your personal minimums, and the more important it becomes to have alternate plans.

Your Personal Minimums Checklist—

- An easy-to-use, personal tool, tailored to your level of skill, knowledge, and ability
- Helps you control and manage risk by identifying even subtle risk factors
- Lets you fly with less stress and less risk

Practice "Conservatism Without Guilt"

Each item provides you with either a space to complete a personal minimum or a checklist item to think about. Spend some quiet time completing each blank and consider other items that apply to your personal minimums. Give yourself permission to choose higher minimums than those specified in the regulations, aircraft flight manuals, or other rules.

How to Use Your Checklist

Use this checklist just as you would use one for your aircraft. Carry the checklist in your flight kit. Use it at home as you start planning a flight and again just before you make your final decision to fly.

Be wary if you have an item that's marginal in any single risk factor category. But if you have items in more than one category, you may be headed for trouble.

If you have marginal items in two or more risk factors/categories, don't go!

Periodically review and revise your checklist as your personal circumstances change, such as your proficiency, recency, or training. You should never make your minimums less restrictive unless a significant positive event has occurred. However, it is okay to make your minimums more restrictive at any time. And never make your minimums less restrictive when you are planning a specific flight, or else external pressures will influence you.

Have a fun and safe flight!

Developed in coorperation with:

FEDERAL AVIATION ADMINISTRATION
AVIATION SAFETY PROGRAM

KING SCHOOLS

King Schools, Inc.
3840 Calle Fortunada
San Diego, CA 92123
1-800-854-1001

FOR SMART, SAFE, & FUN FLYING

PERSONAL MINIMUMS CHECKLIST

Think...

PILOT
AIRCRAFT
ENVIRONMENT
EXTERNAL PRESSURES

Pilot: _____

Date Revised: _____

Reviewed with: _____
(if applicable)

PILOT

Experience/Recency

Takeoffs/landings..... _____ in the last _____ days

Hours in make/model ..... _____ in the last _____ days

Instrument approaches ..... _____ in the last _____ days
(simulated or actual)

Instrument flight hours ..... _____ in the last _____ days
(simulated or actual)

Terrain and airspace .....familiar

Physical Condition

Sleep ..... _____ in the last 24 hours

Food and water ..... in the last _____ hours

Alcohol .....None in the last _____ hours

Drugs or medication.....None in the last _____ hours

Stressful events .....None in the last _____ days

Illnesses .....None in the last _____ days

▶ _____

_____

_____

_____

_____

AIRCRAFT

Fuel Reserves (Cross-Country)

VFR Day ..... _____ hours
Night..... _____ hours

IFR Day ..... _____ hours
Night..... _____ hours

Experience in Type

Takeoffs/landings..... _____ in the last
in aircraft type _____ days

Aircraft Performance

Establish that you have additional performance available over that required. Consider the following:

- Gross weight
- Load distribution
- Density altitude
- Performance charts

Aircraft Equipment

Avionics..... familiar with equipment (including autopilot and GPS systems)

COM/NAV..... equipment appropriate to flight

Charts ..... current

Clothing..... suitable for preflight and flight

Survival gear ..... appropriate for flight/terrain

▶ _____

_____

_____

_____

_____

ENVIRONMENT

Airport Conditions

Crosswind ..... _____ % of max POH
Runway length..... _____ % more than POH

Weather

Reports and forecasts .....not more than _____ hours old

Icing conditions .....within aircraft/pilot capabilities

Weather for VFR

Ceiling Day..... _____ feet
Night ..... _____ feet

Visibility Day..... _____ miles
Night ..... _____ miles

Weather for IFR

Precision Approaches

Ceiling ..... _____ feet above min.
Visibility ..... _____ mile(s) above min.

Non-Precision Approaches

Ceiling ..... _____ feet above min.
Visibility ..... _____ mile(s) above min.

Missed Approaches

No more than ..... _____ before diverting

Takeoff Minimums

Ceiling ..... _____ feet
Visibility ..... _____mile(s)

▶ _____

_____

_____

_____

_____

IACRA: The Future of Airman Certification

by David Fosdick

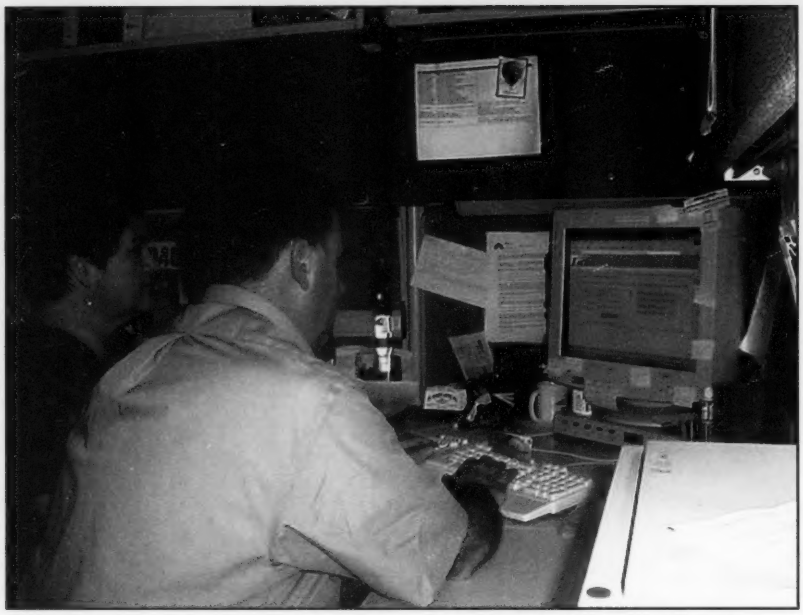
On October 4, the official release of IACRA's Internet-based software for airman certificate applications was announced. Those participating in the ribbon cutting ceremony are David Fosdick, IACRA Business Program Manager; Bob Wright, Manager, General Aviation and Commercial Division; Nick Sabatini, Associate Administrator for Regulation and Certification; Jim Ballough, Director, Flight Standards Service; and Leo Kuneman, IACRA IT Program Manager. (H. Dean Chamberlain photo)

IACRA is here. The FAA announced the official release of its new Internet-based software for airman certificate applications in a ribbon cutting ceremony in its Washington DC headquarters October 4, 2004. The Integrated Airman Certification and/or Rating Application (IACRA) software electronically captures and validates airman information required to complete an airman application. This new optional process is designed to make it easier and faster for FAA personnel, airmen applicants, certificated flight instructors (CFI), and FAA designated pilot examiners (DPE) to process an applicant's "paperwork" and issue the appropriate documents. IACRA can be accessed from any location with Internet connectivity.

IACRA will eventually replace ACRA

IACRA will eventually replace the current Airman Certification and/or Rating Application (ACRA) compact disk-based (CD) computer program that initially automated the application process that allows a certifying officer (CO) such as appropriate FAA personnel or a DPE to enter data in a rules-based program and then print out the completed form for mailing.

IACRA integrates critical elements of multiple FAA databases. During data entry by an applicant, CFI, or DPE, IACRA automatically ensures that an applicant meets all of the regulatory and policy requirements in real-time. If the entered data is incorrect, IACRA stops the process until the correct data is entered. IACRA then uses digital signatures throughout the certification process in order to verify that



Lisa Cotham, an Aviation Safety Technician and on the IACRA Team at the Baton Rouge Flight Standards District Office, is doing a CFI renewal using IACRA. The applicant is logging in to digitally sign the application.

no data is changed. Finally, the application is electronically forwarded to the Airman Registry for final processing while the applicant is issued the appropriate temporary document.

As in all things, we live in a world of change. ACRA, though a good program, is not built on a computer technology that allows for any significant expansion of the process without significant cost. Being Internet-based, IACRA allows for that expansion at minimal cost compared to what ACRA would cost for similar type expansion.

With IACRA, all the functionality of ACRA exists and more. At this time, IACRA supports the following FAA applications: Student Pilot through Airline Transport Pilot, CFI, Repairman Experimental Builder, Letters of Authorization – Original through Authorized Aircraft, 141 schools, and 142 training centers. Future certificate additions will support sport pilot and airworthiness applicants.

Because the cost of supporting two similar programs is not only inefficient, but also costly, the ACRA CD-based program will be phased-out. This will be done in several steps to reduce the impact on applicants, CFI's, and CO's. Those steps are:

1. Effective November 1, 2004, ACRA CDs and ACRA software will no longer be available. This also means all ACRA software will be removed from the ACRA download site on the Internet. The ACRA help desk will continue to support all current installations, but no new installations will be approved, nor will any ACRA fixes be available. All Temporary Certificates, Student Certificates, and Notices of Disapproval produced by the ACRA program must be printed on the official ACRA watermarked paper.

2. Effective December 1, 2004, the FAA's Civil Aviation Registry in Oklahoma City will only accept ACRA Temporary Certificates, Student Certificates, and Notices of Disapproval produced by the ACRA program on ACRA watermarked paper. DPE's can obtain ACRA watermarked paper from their local FAA FSDO. The FAA is checking local stocks of ACRA paper and will reallocate those stocks to support the DPE user community. If your local FSDO does not have any stocks, DPE's should call the ACRA Help desk for help.

3. The proposed termination date of the ACRA program is October 1, 2005. In August of 2005, FAA will re-evaluate this date to determine whether to keep it or extend it. Although IACRA is a voluntary program, all appropriate applicants, CFI's, and CO's are encouraged to use the new IACRA Internet-based program to process your airmen certifications as soon as possible since there is no guarantee that the ACRA program will be extended. On the final ACRA termination date, all support for the ACRA program will end, and the Airmen Registry will no longer accept any ACRA applications dated after the sunset date.

The FAA has completed agency training of the IACRA application and all nine FAA regions are now authorized to use the software. The FAA also provides IACRA application help desk support for FAA employees, applicants, CFI's and DPE's. The help desk can be reached via phone or email. Users are encouraged to provide comments, feedback and suggestions via a link on the IACRA website. For contact numbers, the latest news and Frequently Asked Questions (FAQ's) on IACRA, you can go to <http://acra.faa.gov>.

For more information regarding IACRA or ACRA, please contact AVR Support Central at: Public users can call 1-866-285-4942. Government employees should call 1-405-954-7272. Everyone can send an email to <mailto:9-AMC-AVR-Support-Central@faa.gov>.

+

David Fosdick is an Aviatin Safety Inspector and the IACRA Business Program Manager in Flight Standards' General Aviation and Commercial Division.

Sport Pilot Q&A

On July 16, FAA Administrator Marion C. Blakey signed the Sport Pilot and Light-sport Aircraft Rule. It went into affect on September 1, 2004. To help our readers to understand the rule, the *FAA Aviation News* plans to publish an ongoing questions and answers (Q&A) column about the rule.

What is the earliest I may use a current and valid driver's license for sport pilot medical certification?

Provided you meet the requirements and you are qualified to exercise sport pilot privileges using a current and valid U.S. driver's license, you may do so on September 1, 2004, the effective date of the rule.

If I will only be exercising sport pilot privileges, do I need to renew an FAA medical certificate I now possess when it expires?

You may use your current and valid U.S. driver's license to exercise sport pilot privileges; however, you must hold the required, valid FAA airman medical certificate if you wish to exercise recreation pilot (or higher) privileges.

Why can't an airman with a current and valid driver's license medically self-certify to exercise sport pilot privileges if their most recent Special Issuance was withdrawn or last FAA medical certificate was denied, suspended, or revoked?

To clarify that, if your most recent records on file with the FAA indicate that you were found ineligible to exercise airman privileges for medical reasons then, in the interest of public safety, you shouldn't go out right away and use your driver's license as medical qualification.

We understand that these conditions may not have been expected and may disappoint some people. That was not our intent, nor is it our intent that affected persons would have to maintain an airman medical certificate if they would rather use their current and valid U.S. driver's license to medically qualify as a sport pilot.

We ultimately concluded that, in those cases where the FAA has existing knowledge of medical ineligibility, we need the affected person to address it and, hopefully have it resolved. To meet the intent of the rule, the affected person should apply for reconsideration of their eligibility. In some denial cases, applicants simply may not have provided enough information to the FAA or may not have supplied information that the FAA may have requested. In certain other denial cases, applicants may not have exercised their appeal rights, which could have led to certification in some cases.

The FAA wants to see as many pilots as possible take advantage of this exciting new rule and looks forward to working with individuals seeking to exercise sport pilot privileges. We also intend to work with EAA, AOPA, and other industry groups toward that end.

If I suspect I have a significant medical condition, but have never had an FAA medical certificate denied, suspended, or revoked, can I exercise sport pilot privileges using my current and valid driver's license, if otherwise qualified?

Long-standing FAA regulation, Title 14 Code of Federal Regulations (14 CFR) § 61.53, prohibits all pilots—those who are required to hold airman medical certificates and those who are not—from exercising privileges during periods of medical deficiency. The FAA revised § 61.53 to include under this prohibition sport pilots who use a current and valid U.S. driver's license as medical qualification. The prohibition is also added under §§ 61.23 (c) (2) (iv) and 61.303 (b) (2) (4) for sport pilot operations.

You should consult your private physician to determine whether you have a medical deficiency that would interfere with the safe performance of sport piloting duties. Certain medical information that may be helpful for pilots is posted on the FAA website at <http://www.cami.jccbi.gov/aam-400A/400brochure.html>.

Provided I otherwise qualify and have never sought FAA medical certification, am I authorized to exercise sport pilot privileges on the basis of a current and valid driver's license if I have a chronic medical condition such as diabetes?

You should consult your private physician to determine whether you have a medical deficiency that would interfere with the safe performance of sport piloting duties. You may exercise sport pilot privileges provided you are in good health, your medical condition is under control, you adhere to your physician's recommended treatment, and you feel satisfied that you are able to conduct safe flight operations.

Must I continue to renew my medical certificate if I am subsequently issued a certificate after my last certificate was denied, suspended, or revoked, or may I use my current and valid U.S. driver's license as evidence of medical qualification?

If you are ultimately certified then you are no longer on record with the FAA as having had your most recent application denied or your most recently held FAA airman medical certificate suspended or revoked, etc. Therefore, it is not necessary to maintain airman medical certification thereafter to exercise sport pilot privileges provided you hold a current and valid U.S. driver's license and provided you otherwise qualify.

Is a Special Issuance considered denial of an application for an airman medical certificate?

No. Special Issuance is not considered the denial of an FAA airman medical certificate.

How common are denials for third-class airman medical certificates?

Over the past three years, the number of denials of third-class airman medical certificates has ranged from approximately 2,000 to 2,500 per year based on approximately 135,000 to 140,000 applications for third-class airman medical certification per year. Most of these denials resulted because of a failure of the applicants to provide sufficient information for the FAA to make a favorable decision.

I hold an FAA pilot certificate and I'd like to fly a light-sport aircraft. How does this new regulation affect me?

§61.303 specifies what operating limitations and endorsements must be complied with if you want to operate a light-sport aircraft. This table is designed to clarify the specific requirements for persons who have airman certificates other than a sport pilot certificate when they seek to exercise sport pilot privileges. Use the following table to determine what operating limitations and endorsements in subpart J, if any, apply to you when you operate a light-sport aircraft.

The part 67 medical certificate specified in this table must be valid. The driver's license specified in this table must be current and valid.

If you hold a recreational pilot certificate, but not a part 67 medical certificate, you must comply with cross-country requirements in §61.101(c), even if your flight does not exceed 50 nautical miles from your departure airport.

You must also comply with requirements in other subparts of Part 61 that apply to your certificate and the operation you conduct.

Who do I contact if I have questions on the implementation of the sport pilot and light-sport aircraft rule?

The mailing address and telephone number for the Light Sport Aviation Branch (AFS-610) is:

Light Sport Aviation Branch

If you hold	And you hold	Then you may operate	And
(1) A medical certificate,	(i) A sport pilot certificate,	(A) Any light sport aircraft for which you hold the endorsements required for its category, class, make, and model,	(1) You must hold any other endorsements required by this subpart and comply with the limitations in 14 CFR §61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	(A) Any light sport aircraft in that category and class,	(1) You do not have to hold any of the endorsements required by this subpart, nor do you have to comply with the limitations in 14 CFR §61.315.
	(iii) At least a recreational pilot certificate, but not a rating for the category and class of light sport aircraft you operate,	(A) That light sport aircraft, only if you hold the endorsements required in 14 CFR §61.321 for its category and class,	(1) You must comply with the limitations in 14 CFR §61.315, except §61.315 (c)(14) and, if a private pilot or higher, §61.315 (c)(7)

AFS-610
PO Box 25082
Oklahoma City OK, 73125
(405) 954-6400

Light Sport Aviation Branch (AFS-610) will answer questions via email at <afs610-comments@faa.gov>.

For questions on aircraft certification contact the Small Airplane Directorate (ACE-100) at (816) 329-2464; fax (816) 329-4090; e-mail <9-ACE-AVR-SPORTPILOT-QUESTIONS@faa.gov>.

If you hold	And you hold	Then you may operate	And
(2) Only a U.S. driver's license,	(i) A sport pilot certificate,	(A) Any light sport aircraft for which you hold the endorsements required for its category, class, make, and model,	(1) You must hold any other endorsements required by this subpart and comply with the limitations in 14 CFR §61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	(A) Any light sport aircraft in that category and class,	(1) You do not have to hold any of the endorsements required by this subpart, but you must comply with the limitations in 14 CFR §61.315.
	(iii) At least a recreational pilot certificate, but not a rating for the category and class of light-sport aircraft you operate,	(A) That light sport aircraft, only if you hold the endorsements required in 14 CFR §61.321 for its category and class,	(1) You must comply with the limitations in 14 CFR §61.315, except §61.315 (c)(14) and, if a private pilot or higher, §61.315 (c)(7).

If you hold	And you hold	Then you may operate	And
(3) Neither a medical certificate nor a U.S. driver's license,	(i) A sport pilot certificate,	(A) Only a light sport glider or balloon for which you hold the endorsements required for its category, class, make, and model,	(1) You must hold any other endorsements required by this subpart and comply with the limitations in 14 CFR §61.315.
	(ii) At least a private pilot certificate with a category and class rating for glider or balloon,	(A) Only a light sport glider or balloon in that category and class,	(1) You do not have to hold any of the endorsements required by this subpart, but you must comply with the limitations in 14 CFR §61.315.
	(iii) At least a private pilot certificate, but not a rating for glider or balloon,	(A) Only a light sport glider or balloon, if you hold the endorsements required in 14 CFR §61.321 for its category and class,	(1) You must comply with the limitations in 14 CFR §61.315, except §61.315 (c)(14) and, if a private pilot or higher, §61.315 (c)(7).

RUNWAY SAFETY CORNER

Runway Incursions - Not Just a Pilot Problem

by Paul M. Foster, Jr., EdD, EdS

Preventing runway incursions is one of the Federal Aviation Administration's (FAA's) highest priorities. Though relatively small in number when compared to the high level of traffic that moves safely through the nation's airports every day, runway incursions present a special challenge. Not only do they have the potential to put lives at risk due to the number and proximity of aircraft operating on the airport surface, but they also take place in a complex and dynamic environment.

Pilots are trained to carefully plan the en route portion of their flight, and the Office of Runway Safety & Operational Services is stressing the importance of using the same type of careful planning for ground operations. In fact, recently published standard operating procedures (SOPs) emphasize safe surface operations. For example, one SOP recommends that pilots review airport diagrams before taxiing or landing, particularly at unfamiliar airports.

What Makes Up An Airport?

Besides the hangars, airports are usually equipped with office and terminal buildings which house administrative, traffic control, communication, and weather observation personnel. An airport is a place for landing and departure of aircraft, and for receiving and discharging passengers and cargo. In addition to the wide paved runways, there are narrower paved taxiways connecting the runways to other parts of the airport. A taxiway and a runway are usually connected at each end and at several intermediate points.

From a safety perspective, an airport is divided into two distinct areas. One area is known as the movement area, which is under the control of air traffic, and usually includes the runways, taxiways, and other areas of an airport that aircraft use for taxiing, takeoff, and landing. The other area, known as the non-movement area, usually includes taxi lanes, aprons, ramps, and other areas not under the control of air traffic. The movement of aircraft or vehicles (i.e., tugs) within the non-movement area is the responsibility of the pilot, mechanics, the aircraft operator, or airport management.

At most airports, the movement and non-movement areas are separated by a solid yellow line and a dashed yellow line (See Figure 1). It is permissible to cross from the dashed side to the solid side; however, Air Traffic Control (ATC) permission is always required to cross from the solid side to the dashed side at an airport with an operating control tower.

What Should Mechanics Know about a Surface Incident and a Runway Incursion?

A surface incident is a broad term encompassing all movement areas (including runways and taxiways) and is "any event where unauthorized or unapproved movement occurs within the movement area, or an occurrence in the movement area associated with the operation of an aircraft that affects or could affect the safety of flight." Surface incidents may be caused by pilots and reported as pilot deviations (PD), by vehicle drivers or pedestrians and reported as vehicle/pedestrian deviations (V/PD), or by air traffic control and reported as operational errors/deviations (OE/OD). A V/PD report includes incidents caused by mechanics taxiing and/or towing aircraft. The FAA further classifies a surface incident as either a runway incursion or a non-runway incursion.

A runway incursion is "any occurrence on the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land."

The FAA knows the who, what, where, and when aspects of a surface incident or runway incursion, but not always the why. Under the voluntary Runway Incursion Information Evaluation Program (RIIEP), questions have been designed to help answer the why. For example, when a mechanic taxiing an aircraft is involved in an incident and decides to participate in RIIEP, some basic questions will be posed, such as: (1) Was the mechanic familiar with the airport layout? (2) Were airport signs, lights or markings contributing factors? (3) Did language or clearance interpretation problems contribute to the event? (4) Did radio communications play a role? and (5) What does the mechanic believe caused the incident?

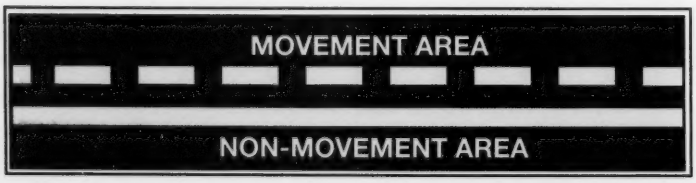


Figure One

Where Can the Mechanics Be Found?

The vast majority of mechanics can be found performing maintenance and other related tasks in the hangars. There are a few mechanics selected to work next to the terminal buildings on the ramp or apron servicing aircraft. Regardless of where the mechanics work, they rarely venture into the movement area. However, it is that rare entry into the movement area that poses a challenge for the mechanics as well as air traffic controllers and pilots. During the course of their shift, mechanics may be required to reposition an aircraft before or after maintenance. The repositioning of aircraft is usually accomplished by either taxiing or towing and may require the mechanics to enter the movement area. Since January 2000, mechanics have been involved in approximately 178 surface incidents/runway incursions (See Figure 2). After analyzing the incident reports, it was found that the mechanics did not have any problem with communications, or communicating with air traffic. As a matter of fact, air traffic reported mechanics had acknowledged the taxi/tow instructions and read the instructions back correctly; however, they still proceeded into the movement area, crossed active runways, and entered active taxiways without proper authorization or clearance.

Navigating Around the Airport

Most towered airports have markings, signs, and lights designed to assist you in navigating around the airfield. Runways are identified by the wide, white-painted edge lines and white-painted dashed centerline. Taxiways are marked with double yellow-painted edge lines and a yellow-painted solid centerline. Remember, the yellow taxiway centerlines may lead on, lead off, or cross a runway.

During low visibility or night operations, the runways, in addition to the white-painted markings, have white lights along the edge, centerline, and touchdown zone. However, it should be noted that on instrument runways the last 2,000 feet will have yellow edge lights. The taxiways are illuminated with blue edge lights (or reflectors) and green centerline lights (or reflectors). Mechanics need to know that when these markings, signs, and lights are missed or ignored, the opportunity for errors increases. Guidance on how to operate safely in the airport environment is critical.

What Can Be Done?

The Office of Runway Safety & Operational Services offers the following recommendations:

1. Aviation Maintenance Technician Schools, in addition to teaching their students how to taxi aircraft, should teach airfield markings, signs and lights, and basic airport layout. The aviation maintenance technician school is responsible for teaching mechanics to inspect, repair, and maintain today's technologically advanced aircraft. According to the curriculum, maintenance technicians are provided instructions in ground operations including taxiing and towing aircraft. It is during these instructions that safe surface operations should be introduced.

2. The employing aviation company, in addition to reinforcing basic airfield markings, signs, and lights, should invest some time in conducting advance airport layout training or ensure that their mechanics attend equivalent training that may be conducted by airport operations. This course would be specific to the airport where they operate.

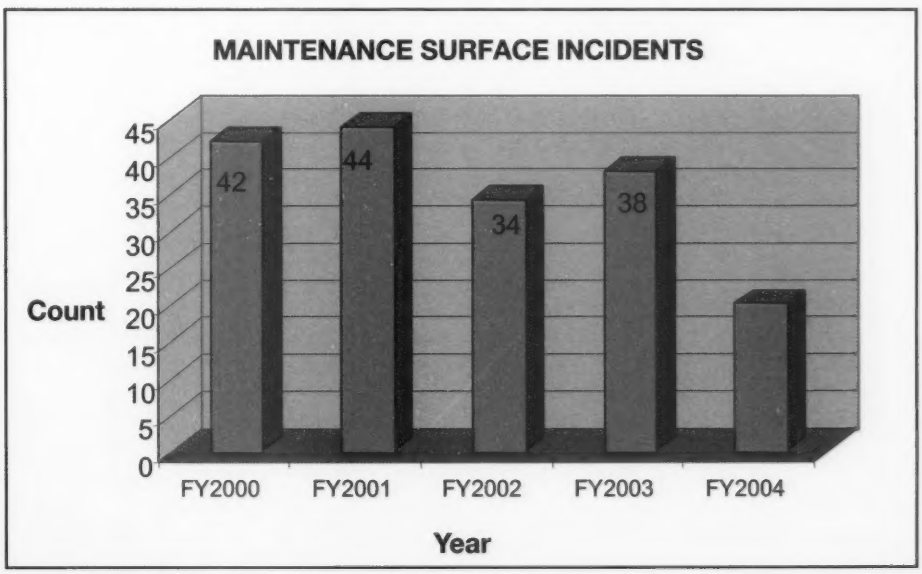


Figure Two. Surface incidents/runway incursions involving mechanics taxiing or towing aircraft and driving tugs into the movement area by fiscal year (FY).

Dr. Paul Foster, Jr., is an FAA Aviation Safety Inspector-Airworthiness and the Flight Standards Representative in the Western Pacific Region Runway Safety Program Office. He is also an Adjunct Associate Professor with Embry-Riddle Aeronautical University teaching graduate and undergraduate courses in aviation safety, management, and aircraft maintenance.

25 Years of Aviation Wisdom

from NASA's ASRS Callback

Many ASRS reports conclude with a statement of the lesson (or lessons) learned by the reporter. Here are 25 important lessons culled from the collective wisdom of the reports submitted to NASA's Aviation Safety Reporting System (ASRS) over the past 25 years.

Taking the time to share a lesson learned through a report to the ASRS is a good thing and...we appreciate all of the submissions. By heeding the advice offered below, however, you may avoid a mishap and we may not have reason to hear from you. That's a good thing too.

1. ...I learned that it is better to divert early than to press on in deteriorating conditions hoping for a positive outcome. No one should attempt to "scud run" in marginal VFR conditions as I did (with a near disastrous result).

2. ...Even though I have been flying for a number of years, I learned a valuable lesson about how fast weather can close in and how stupid it is to "assume" that the weather will clear.

3. ...For every flight I make now, IFR or VFR, outside air temperature and icing forecasts will receive very close attention. I will never again fail to scrutinize approaching IMC for icing. It is an insidious trap.

4. ...Not knowing if the other aircraft was being provided advisories shouldn't have been a factor. It's always, "see and avoid" out there.

5. ...They say a good approach leads to a good landing. Early recognition of a bad setup will enable a go-around and prevent getting "into the hole" where few options remain.

6. ...No matter how familiar the other guy says he is with the airport, monitor, monitor, monitor.

7. ...From now on I'll visually check the fuel myself and I'll keep track of the fuel I'm using in flight.

8. ...Here is what I learned: 1) To the extent possible, always get prepared on the ground, not while in the air. 2) Don't let external pressures like time make you do something you haven't thoroughly prepared for.

9. ...I was making a rushed approach to land. I have learned that when I am rushed is when I really need to take the time for the checklist.

10. ...I guess the lesson to be learned is not to let personnel (station, refueling, etc.) or situations rush and distract you in your normal duties. Sometimes inattention to the small details will cause as many problems as the large ones.

11. ... In a real-life emergency, the work load and noise can be more distracting than the simulator can emulate. Don't get distracted from the first priority - fly the airplane! Concentration is key.

12. ...Post-flight concentration may have dropped after a successful landing in poor conditions. As they say, "The flight's not over until the aircraft is stopped and the engine is shut down."

13. ...I was counting on the auto-flight system to fly the departure as it was supposed to and got a little lax. Lesson learned! Always back it up and don't relax. Garbage in, garbage out. If the route isn't in there or it drops out, you're not going to fly what you're thinking you'll fly.

14. ...In retrospect, doing a go-around to troubleshoot the problem wasn't too smart. We had a perfectly good runway right in front of us.

15. ...Any time an aircraft is damaged, don't fly it until it can be proven that all necessary actions have been taken to return the aircraft to an airworthy condition.

16. ...I blame the mistake on simple overconfidence. Experience, it seems, is no replacement for doing one's homework.

17. ...Line check airmen can make mistakes.

18. ...I could have done a better job of communicating. It must be difficult enough to be a controller in these situations, let alone a mind reader. The old saying goes, "Aviate, navigate, communicate." And, as I just learned, communicate clearly. Leave the guesswork on the ground.

19. ...I learned, that if ever there is a doubt, not only as to what ATC said, but also what they meant, I should become absolutely clear on ATC's instructions, especially before taxiing onto an active runway.

20. ...I assumed that the traffic situation would work out. I learned a valuable lesson for controllers: "Never

assume anything."

21. ...It has been my experience that transmissions shouldn't be made to aircraft during the takeoff roll unless absolutely necessary.

22. ...Looking back on it, I learned two things: 1) Take the time necessary to do the work right even if there is pressure to get the plane out. 2) Always check the part number, no matter who says it's the right part.

23. ... Always carefully check the MEL book when deferring an item and also check for special procedures. Special procedures may not be listed on the MEL placard.

24. ...I pointed out to the gate agent that federal aviation regulations specifically prohibit boarding a passenger who appears to be intoxicated. Never let anyone talk you into it. The situation never gets better. It only gets worse.

25. ...The timely and accurate flow of information from the cabin to the cockpit was vital in resolving the situation. Lesson learned: CRM (Crew Resource Management) works!

Mostly funded by the FAA, NASA administers the program. Its web site is <http://asrs.arc.nasa.gov>.

Aviation Maintenance Alerts

Special Airworthiness Information Bulletin (SAIB)

Introduction: This Special Airworthiness Information Bulletin (SAIB) alerts part 135 and 91 Air Operators, Repair Stations, mechanics holding Inspector Authorization (IA), Fixed Base Operators, and all inspectors of the Flight Standards District Offices (FSDO) to the existence and use of unapproved life rafts in aircraft. During the investigation of three related Suspected Unapproved Parts (SUP) cases, this office has become increasingly aware of widespread use of non-TSO life rafts in both 14 CFR part 135 and part 91 aircraft, especially in south Florida.

Simply stated, the certification requirements for U.S. civil aircraft describe, "When its intended purpose is for emergency equipment, that equipment must be approved." This statement applies, regardless of the requirement to carry or not to carry a life raft on the aircraft.

Background: Non-TSO life rafts and emergency equipment kits, manufactured and distributed by Survival Products of Hollywood, Florida, and others, do not meet the minimum TSO requirements and are not approved for use on any aircraft. Examples of non-conformity are, they may not have multiple chamber construction, lack the required freeboard when loaded and lack required buoyancy in partially inflated condition. These unapproved rafts are advertised on the Internet as acceptable (approved) for use on "private" aircraft and "marine" use, when neither the FAA nor the U.S. Coast Guard has issued them approvals. These unapproved rafts have been sold to part 135 Air Operators, found on part 135 aircraft in service during FAA surveillance and are available for sale and rent at Fixed Base Operators and "Pilot Shops".

The following Survival Products, Inc, non-TSO life rafts and emergency equipment kits have been found on aircraft in addition to being for sale and rent:

• Life rafts; P/N 1400-1, 1400-3, RAF1104-101, 1900-1, 1900-3, 1900-1/2000-1, 1900-1/2000-3 & 1900-1/200-5
• Survival kits; P/N 1500-1, 1500-3 & 1500-5

There are additional non-TSO life raft manufacturers making their products available on the aviation market, although none have been found on aircraft or for rent during our investigations.

Recommendation: Each person should inspect their life raft and emergency equipment kit in use or available for use on any aircraft, to ensure it is clearly marked FAA-TSO. In addition, that it is newly manufactured or has been inspected and approved for return to service by its original manufacturer or an FAA approved repair station. Any non-TSO life raft or emergency equipment kit, regardless of its manufacturer, should be removed from service and clearly marked, "NOT FOR USE ON AIRCRAFT."

FOR FURTHER INFORMATION, CONTACT: Richard Shaffer, Principal Maintenance Inspector, FSDO-17, 1050 Lee Wagener Blvd., Ft. Lauderdale, FL 33315; telephone (954) 635-1347; or (954) 635-1300; fax (954) 635-1260; e-mail Richard.D.Shaffer@faa.gov

Service Difficulty Report Data

This is a selection of the reports printed in the *Aviation Maintenance Alerts*. These reports are derived from unverified information submitted by the aviation community with FAA review for accuracy.

Control Number Difficulty Date	Aircraft Make Aircraft Model	Engine Make Engine Model	Component Make Component Model	Part Name Part Number	Part Condition Part Location
CA040415002 1/13/2004	SWRNGN SA226TC	GARRTT TPE3310UA		PLENUM 310166812	CRACKED ENGINE

(CAN) FLIGHT CREW RECEIVED SPLIT SECOND FIRE WARNING INDICATION ON LT ENG. DUE TO BRIEF NATURE OF IND FLIGHT CREW MONITORED GAUGES, DETERMINED FALSE INDICATION. SHORTLY AFTER ENG STARTED LOSING PWR UNTIL IT REACHED ABOUT 55 PERCENT TORQUE. UPON INSP, LT ENG PLENUM DRAIN FIT WAS FOUND CRACKED, PARTIALLY SEPARATED FROM ENG PLENUM IN REARWARD DIRECTION. ALLOWED HOT COMBUST GASES INTO ENG COMPART. PLENUM DRAIN FITTING IS WELDED TO ENG PLENUM. INSP REVEALED MINOR FIRE DAMAGE TO ENG WIRING HARNESS, SURROUNDING AREA. REASON FOR CRACKED FITTING WAS DETERMINED TO BE DRAIN TUBE ATTACHED TO FITTING WAS INSTALLED IN SUCH WAY IT WAS PUTTING A REARWARD LOAD ON DRAIN FITTING, CAUSING IT TO CRACK AND BREAK AWAY FROM PLENUM.

CA040603003 5/20/2004	SKRSKY S64E	PWA JFTD12A4A	DUMP VALVE 586982	MALFUNCTIONED ENGINE FUEL

(CAN) PILOT BEGAN DESCENT, HEARD (WHOOSH) SOUND TYPICAL OF SOFT STALLING ENG. FOLLOWED BY N1 UNDERSPEED AUDIO, INDICATOR LIGHT WARNING. FLT CREW VERIFIED NR 1 ENG AS BEING AT FAULT. COPILOT SHUTDOWN ENG, BEGAN TO MOTOR TO DECREASE T5 TEMP WHILE PILOT RELEASED LOAD. WITH T5 TEMP STABILIZED ENG WAS SECURED, AC RETURNED TO ITS SERVICE LANDING, MADE AN UNEVENTFUL SINGLE ENG LANDING. COMPLETE VISUAL INSP OF ENG WAS CARRIED OUT BY MAINT CREW WHICH REVEALED NOTHING ABNORMAL. FUEL PRESS AND DUMP (P&D) VALVE, ENG FUEL FILTER WERE REPLACED AS IS MAINT PROCEDURE AFTER AN ENG SOFT STALL. LIMITS HAVE NOT BEEN EXCEEDED. ENG FCU WAS ALSO REPLACED. FOLLOWING ENG GROUND RUN AND TEST, AC WAS RETURNED TO SERVICE.

CA040604002 5/19/2004	PIPER PA44180	LYC 0360A1H	PISTON 75089LW11775	BROKEN ENGINE

(CAN) DURING NR 1 INSP, A SIG AMOUNT OF NON-FERROUS METAL WAS FOUND IN OIL FILTER ELEMENT. OIL SUCTION SCREEN WAS PULLED AND WAS FOUND TO BE FULL OF NON-FERROUS METAL. CYL NR 1 WAS PULLED AND FWD PISTON PIN PLUG WAS FOUND TO BE WORN COMPLETELY ALLOWING PISTON PIN TO MIGRATE FWD TO POINT AFT PISTON PIN PLUG WAS ONLY PART LEFT IN AFT PISTON BOSS BETWEEN CONNECT ROD AND PISTON. AFT PISTON BOSS HAD 1 INCH PIECE BROKEN OUT OF IT. NR 3 CYL WAS REMOVED, WAS FOUND THAT FORWARD PISTON PIN PLUG WAS STARTING TO WEAR ABOUT .0625 OF AN INCH. HEAT AND TIME, ALUMINUM PLUG WORE AGAINST STEEL CYLINDER AND ONCE WEAR STARTED, IT WORE RAPIDLY. NO IND OF OIL PRESS OR POWER LOSS ON PREVIOUS FLIGHT OR DURING RUN UP FOR INSP.

CA040604003	PILATS	PWA	SEAL	DAMAGED
6/3/2004	PC1245	PT6A67B	3022376	EPA CAN

(CAN) AIRCRAFT HAD JUST LANDED AND SHUT DOWN AT ITS DESTINATION AIRPORT. THE PILOT DISEMBARKED THE AIRCRAFT AND NOTICED A LARGE STREAK OF OIL DOWN THE LT SIDE OF THE FUSELAGE. MAINTENANCE INVESTIGATED THE INCIDENT AND FOUND ANOTHER LARGE OIL STREAK DOWN THE BELLY OF THE AIRCRAFT. IN ADDITION TO THE TWO OIL STREAKS THE EPA CAN WAS COMPLETELY FULL. THE STARTER-GENERATOR WAS REMOVED, AND MAINTENANCE FOUND THE OIL SEAL WAS SLIGHTLY DAMAGED. A NEW SEAL WAS INSTALLED AND THE AIRCRAFT GROUND RUN WITH NO FURTHER DEFECTS NOTED.

2004FA0000601	DIAMON	LYC	TEE FITTING	DAMAGED
7/27/2004	DA40	IO360FLY*		ENGINE SERVO

DURING MANEUVERS, THE FUEL PRESSURE GAUGE AND ENUNCIATOR SYSTEM WARN OF A LOW FUEL PRESSURE PROBLEM. ALL ENGINE INDICATIONS HOWEVER, SHOW THAT FUEL FLOW AND PRESSURE ARE NORMAL. THIS PROBLEM HAS BEEN EVIDENT IN OTHER AIRCRAFT IN THE FLEET OF 10 DA40 AIRCRAFT. THE MOST SUCCESSFUL METHOD OF ELIMINATING THIS INDICATION PROBLEM IS TO BLEED THE AIR THAT SEEMS TO HAVE ACCUMULATED IN THE TRANSDUCER LINES AND FITTINGS.

CA040526001	DHAV	PWA	PSEU	FAILED
5/24/2004	DHC8311	PW123	858601	MLG

(CAN) FLIGHT CREW REPORTED UPON SELECTION OF GEAR DOWN, INITIALLY THREE GREEN INDICATED, SHORTLY AFTER, A FLICKERING OF THE NOSE GEAR DOOR (AMBER) AND UNSAFE (RED) AND HORN SOUNDED, THEN CLEARED. ON TAXI IN SNAG RE-OCCURRED AND GREEN GEAR SAFE LIGHT NOW U/S. ALTERNATE VERIFICATION LIGHTS INDICATED GEAR SAFE. MAINTENANCE FOUND CARD FAULT ON PSEU. REPLACED AND TESTED UNIT AND COMPLETED GEAR SWINGS WITH NO FAULTS FOUND. AIRCRAFT WAS RETURNED TO SERVICE. SNAG RE-OCCURRED FOUR FLIGHTLEGS LATER WITH INDICATION OF GEAR UNSAFE ON TAXI. AIRCRAFT IS CURRENTLY IN HANGAR BEING INVESTIGATED.

CA040709003	CESSNA	CONT	BELT	FAILED
6/6/2004	U206	IO550F	642335	OIL VALVE

(CAN) DURING ENGINE START, FIRST FLIGHT OF THE DAY, OIL PRESSURE WAS OBSERVED AS BEING TOO HIGH (75 PSI AT IDLE). SYSTEM BLOCKAGE WAS SUSPECTED, OIL FILTER INSPECTED (CLEAR), OIL DRAINED AND INSPECTED (CLEAR), PRESSURE CHECKED AT OTHER PRESSURE POINTS IAW MFG SERVICE REP. INSTRUCTIONS. (AIRFRAME INDICATOR ACCURACY CONFIRMED.) NIL DEFECT FOUND. OIL PRESSURE RELIEF VALVE REMOVED, VISUALLY INSPECTED (NIL DEFECTS OBSERVED), REINSTALLED. ENGINE GROUND RUN, NIL CHANGE IN OIL PRESSURE. RELIEF VALVE ADJUSTING SCREW TURNED OUTWARD TO STOP. OIL PRESSURE OBSERVED (JUST IN RANGE). VALVE ASSEMBLY REPLACED WITH SERVICEABLE UNIT, OPERATION NORMAL.

The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products and can be found on the Web at <http://www.faa.gov/avr/afs>. Click on "Maintenance Alerts" under Regulations and Guidance. The monthly contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports, Service Difficulty Reports, and Maintenance Difficulty Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Aviation Data Systems Branch (AFS-620); P.O. Box 25082; Oklahoma City, OK 73125-5029.

• Looking Back

The "Tales of an ASI" article in the November-December 2003 issue about flight reviews was informative. I would like to point out a small, but important detail.

The flight review required by 14 Code of Federal Regulations (14 CFR) §61.56(c) is not required every 24 months. It is required "...since the beginning of the 24th calendar month before the month in which the pilot acts as pilot in command." We do not look forward from the date of a flight review for compliance; we look backward from the date we acted as pilot in command (PIC). If a pilot's last flight review was in January of 1977, the pilot is in compliance forever, unless the pilot acts as PIC without one after January 1979.

I really appreciate your comment about the FAA's "Wings" program. It is one of the FAA's most effective efforts.

Jake Johnson
Via e-mail

You are correct. In checking compliance with the rule, FAA Aviation Safety Inspectors do look back from the date a pilot acted as PIC. However, most pilots look forward when planning when to accomplish a flight review to remain current to act as PIC.

• DUATS and Other Things

I much enjoy your magazine, but Ms. Blakey doesn't tell the whole story in her editorial when discussing pilot access to Temporary Flight Restriction NOTAM information in the July/August issue.

Also she uses the term "partnered with industry" to provide pilots with valuable preflight information using the Direct User Access Terminal System (DUATS). The FAA did not "Partner" with DUATS. The FAA "Employs" DUATS. The FAA foots the entire operating cost for DUATS. It costs the pilot nothing. Neither does Flight Service.

This begs the question, why would the FAA pay the salary of 3,000 pilot weather briefers in Flight Service as well as the operational cost for the many DUAT subscribers?

Just wondering.
Franklin N. White
Via e-mail

The answer is safety. Plus, pilots indirectly contribute to the support of these services through their taxes.

• Obtaining Photos

The following e-mail comes from Germany asking about the beautiful balloon cover of the September/October 2004 issue.

How can I get a copy of the photograph shown on the cover of the September/October 2004 magazine?

Lucas Manther
Via e-mail

Thank you for your question. To expand upon your question, we want to include articles as well as photographs. The answer depends upon the article or photograph. FAA Aviation News *routinely prints two types of articles or photographs.*

The first type is those articles or photographs produced by the FAA Aviation News *staff. These articles or photographs normally are not copyrighted. As a government publication, this type of material is in the public domain. Anyone can reproduce them. The only thing the magazine asks is that appropriate credit be given the magazine as the source.*

If someone asks, on a workload-permitting basis, we are happy to provide an electronic copy of the article or photograph.

The second type is those articles and photographs provided by non-government writers, photographers, and organizations. Normally, these items are copyrighted. The magazine will have permission to reproduce the items for use in the magazine, but we don't normally have permission to permit anyone else to reproduce the article or photograph. In these cases, we will refer the person asking for the material to the source that provided us the article or photograph for permission to use the article or photograph.

FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, FORUM Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

AVIATION REGISTRY WEB SITE ADDS "TAIL" NUMBER SEARCH

Anyone with access to the Internet may now check data on all U.S. registered civil aircraft. The new option is on the already popular U.S. Civil Aviation Registry web site operated by the Federal Aviation Administration (FAA) in Oklahoma City, and located on the world-wide web at <http://registry.faa.gov/>.

The site has many other aircraft and airmen information options and is averaging over a thousand visitors per day.

The new aircraft search option lets aviation industry, state and local government agencies, pilots, and other aviation enthusiasts access the vital statistics of any U.S. registered aircraft by entering its "tail" or N number. Searchers get the aircraft's description, the registered owner and co-owners, additional airworthiness data about engine type, temporary registrations, and modifications. Searches may also be made by: aircraft serial number, make-model, state-county, and the name of registered owners.

The N number search option was made available on April 4, and has already processed nearly 800,000 queries.

The Registry plans to further expand the web site, introduce new storage technology and get into electronic commerce which will provide certain Registry services online. Registry customers can reserve and renew N numbers online and pay for those services with their credit card and order and pay for copies of aircraft records. Airmen records and requests for information under the Freedom of Information Act cannot be ordered through the web site, but upon receipt of an invoice for those services they can be paid for with a credit card on the web site.

The Civil Aviation Registry, located in Oklahoma City, directs all matters associated with the planning, development, and implementation of the regulations and systems associated with the registration of U.S. civil aircraft. The Registry also manages and operates national comprehensive systems for the issuance of all FAA airmen certificates and the legal content of all airmen certification records.

The overall Registry web site provides full sets of both the aircraft and airmen databases, various forms used to do business with the Registry, and other useful information. In addition, there are now some services that can be requested and paid for online. Data bases in each category may also be downloaded which include all information for aircraft. For airmen, privacy act information is not included, and addresses are redacted on airmen who chose not to have their address released.

The Registry staff of 220 interacts with hundreds of thousands of customers every year. They issue some 70,000 aircraft registration certificates and 180,000 airmen certificates, answer over 140,000 telephone calls, reserve 17,000 special aircraft registration numbers (N numbers), provide 200,000 copies of records, and update over 108,000 addresses. In addition, Registry systems provide information to FAA aviation safety inspectors, National Transportation Safety Board investigators, and law enforcement agencies to support aviation safety activities.

CANADA, MEXICO AND U.S. ADVANCE HARMONIZED AVIATION SYSTEM FOR NORTH AMERICA

On September 27, U.S. Secretary of Transportation Norman Y. Mineta announced several new agreements between the United States, Canadian, and Mexican civil aviation authorities that will result in a seamless satellite navigation system, more direct aircraft routing procedures, and greater airspace capacity and flexibility.

"The economies of our three great nations rely on transportation to connect products to consumers, businesses to their customers and tourists to their destinations," said Secretary Mineta. "We must make flying throughout North America as seamless as possible if we are to truly reap the rewards of the expanding global economy."

Mineta announced a new agreement with the three North American countries to implement a common Reduced Vertical Separation Minimum (RVSM) for North American airspace starting Jan. 20, 2005. RVSM is the reduction in vertical separation for properly equipped aircraft flying between 29,000 and 41,000 feet. Most importantly, Mineta noted, RVSM increases airspace capacity at high altitudes, providing greater flexibility for air traffic controllers and pilots, reducing delays and saving fuel.

"Today marks a big step toward a seamless aviation system for North America," said FAA Administrator Marion C. Blakey, who represents the Department in the North American Aviation Trilateral (NAAT) and was U.S. negotiator for the initiatives. "The United States has a shared vision for satellite navigation with Canada and Mexico. We're moving to make that a reality."

Mineta also announced an agreement to expand the use of the FAA's Wide Area Augmentation System (WAAS) throughout North American airspace. Starting in 2005, WAAS reference stations for the first time will be installed at four sites in Canada and five in Mexico. In addition to trans-border navigational benefits, these new stations will improve WAAS availability in Alaska, Blakey said.

NAAT members also agreed to work together to implement Required Navigation Performance/Area Naviga-

tion (RNP/R-NAV) in North America. RNP/R- NAV utilizes improved aircraft navigational technologies to allow pilots to select more direct routes, saving on flight times and fuel costs. These reductions can also provide environmental benefits, Blakey noted.

FAA TO CREATE CENTER OF EXCELLENCE FOR CABIN AIR QUALITY

The FAA will establish a new "Center of Excellence" headed by Auburn University to examine cabin air quality and study chemical and biological threats in airliners.

Officially titled the "Air Transportation Center of Excellence for Airliner Cabin Environment Research," the consortium will research cabin air quality and conduct an assessment of chemical and biological threats.

Other universities taking part in the effort include Purdue University, Harvard University, Boise State University, Kansas State University, the University of California at Berkeley, and the University of Medicine and Dentistry of New Jersey.

"We've brought together some of the brightest minds science has to offer to focus on cabin air quality and chemical and biological threats to protect passengers and crew members," said FAA Administrator Marion C. Blakey. "This research will be of great benefit to the flying public."

The FAA will pump at least $1 million into the center the first year and $500,000 in each of the second and third years. Matching funds will be provided by the private sector.

Legislation passed in 1990 allows the FAA to partner with universities and industry to conduct research and development toward improving aviation safety, environmental impact and efficiency, and airspace and airport planning and design. Seven other Centers of Excellence have been established, dealing with computational modeling of aircraft structures, airport pavement technology, operations research, airworthiness assurance, general aviation, aircraft noise, aviation emissions mitigation and advanced materials.

For more information about the FAA's Centers of Excellence program visit <www.coe.faa.gov>.

RUNWAY INCURSIONS CONTINUE DECLINE IN 2003

Runways at the nation's airports are getting safer for the second year in a row. Runway incursions dropped 20 percent over a four-year period, according to an FAA report recently released. U.S. airports recorded 324 incursions last year, of which just 32 were characterized as high risk. Those serious incidents have dropped 50 percent since 2000. For the second consecutive year, none of the most serious incursions involved two large commercial jets.

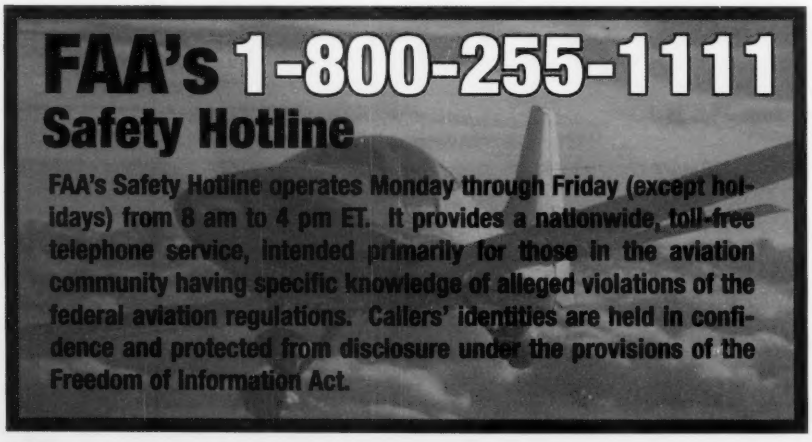
"The numbers tell the story. American runways are the safest the world has to offer," said FAA Administrator Marion Blakey. "Pilot awareness programs and new technology continue to pay real safety dividends on the nation's runways."

The FAA continues leading an industry-wide effort to improve runway safety through increased education, training and awareness, along with new technology and improved airport runway markings and lighting. To prevent runway accidents, the FAA has delivered new technology called the Airport Movement Area Safety System (AMASS) to 34 airports, and is deploying the new Airport Surface Detection Equipment Model X (ASDE-X) to another 25 airports.

By definition, a runway incursion is when an aircraft, vehicle, person, or object on the ground creates a collision hazard, or is too close to an aircraft taking off, intending to take off, landing, or intending to land.

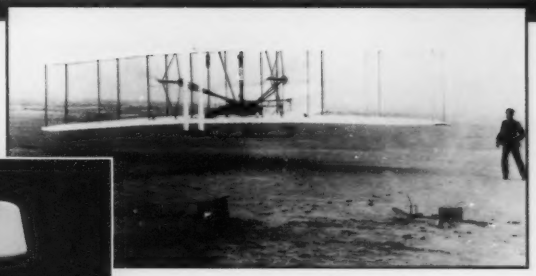
The 324 incursions last year were 15 less than in 2002. Under the FAA's method of measuring incursions by severity categories from A to D, the higher-risk (A and B) incursions dropped to 32 last year, five less than in 2002. The incursion rate per million takeoffs and landings was 5.2, unchanged from 2002.

Reducing runway incursions is one critical safety objective of the FAA's strategic "Flight Plan" through 2008. One of the "Flight Plan's" performance targets is to reduce the number of category A and B runway incursions by a minimum of 48 percent, with no more than an average of 27 serious incursions per year by fiscal year 2008.


FAA's 1-800-255-1111
Safety Hotline
FAA's Safety Hotline operates Monday through Friday (except holidays) from 8 am to 4 pm ET. It provides a nationwide, toll-free telephone service, intended primarily for those in the aviation community having specific knowledge of alleged violations of the federal aviation regulations. Callers' identities are held in confidence and protected from disclosure under the provisions of the Freedom of Information Act.

Editor's Runway

from the pen of H. Dean Chamberlain



SpaceShipOne with White Knight *provided courtesy of Scaled Composites.*

Another Historic First Flight

It was an exciting week here in the FAA. More than one FAA employee was standing by one of the TV monitors in the FAA' s Orville Wright building's lobby (the old Federal Office Building (FOB) 10A—FAA's Washington headquarters building) waiting to see if SpaceShipOne would successfully complete its second required flight into near-space in the ship's attempt to capture the $10 million dollar X-Prize. The X-Prize was established to reward the first commercial vehicle to make two flights into near-space within a 14-day period with the equivalent weight of three "passengers" onboard.

What added to the suspense was the memory of the news media video many of us had seen of the ship's uncommanded rolling during its first required flight. The question on everyone's mind was would the ship have the same problem on its second flight. Would something or some event prevent the ship from winning the X-prize?

The following day's newspaper headlines told the story. The flight was successful.

But as I watched the ship's release and drop from its "mother" ship, the *White Knight*, I had an interesting thought. I realized after the ship's rocket burn and ascent to more than 100 kilometers that I was standing in the Orville building named after; you guessed it, Orville Wright. The building was renamed earlier this year. (Yes, there is also a Wilbur Building. It is the former FOB 10B, a sister building located across the street from Orville.) For those who have been in the Orville building, they know that suspended from the ceiling above one of the building's entrances is a scale model of a Wright designed aircraft. The model made me remember the past.

It will be a year in December since the aviation community celebrated the 100th anniversary of Orville Wright's historic flight at Kitty Hawk North Carolina. Now less than a year after that celebration, the world has witnessed another historic first—the flights of SpaceShipOne to win the X-Prize. The first non-government sponsored flights to the edge of space and back. These two record-breaking flights—one in 1903, the other in 2004— within a span of less than 101 years, may in the course of history be judged to be of equal importance. One cleared the way for earth-bound flight; the other for commercial-passenger carrying space flight. Both broke the shackles that had chained mankind to the earth for so long. Both gave flight to everyone's imagination to soar to new heights.

As we approach another New Year, we on the *FAA Aviation News* staff look forward to serving you in 2005. We want to thank you for your readership this year and want to wish you a safe and happy holiday season.

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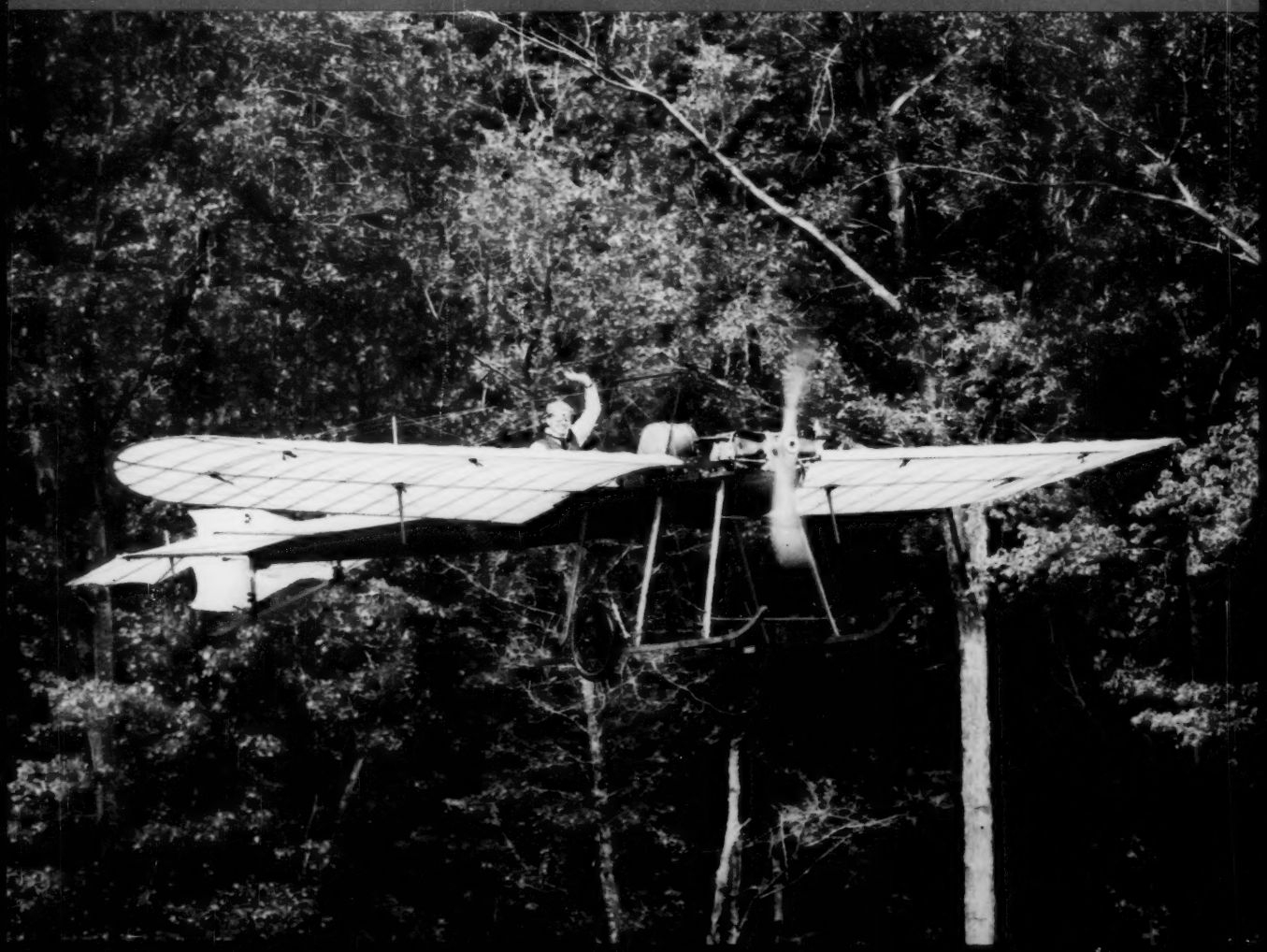

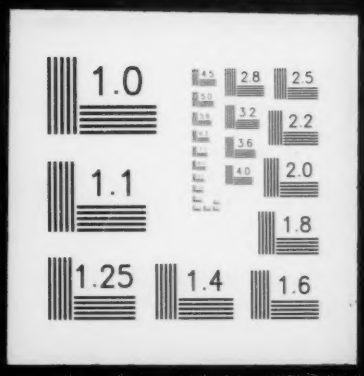
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